UNIVERSITETI "ISMAIL QEMALI" VLORË

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Collaborative Strategies for Adaptation and Progress"

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About

The international Conference and Summer School of ASECU Youth (Students Association of Economic Universities of South and Eastern Europe and the Black Sea Region) is an annual event aimed at bringing together young scholars, researchers, and students interested in Economics, business studies and related fields from countries in South and Eastern Europe and the Black Sea , as well as from the rest of the world. The Summer School and Youth Conference provides a platform for participants to exchange ideas, present research findings, and engage in discussions on various economic topics. The Summer School component typically offers workshops, seminars, and lectures conducted by experts in the field, providing participants with opportunities to enhance their knowledge and skills in specific areas of economics. These sessions often cover topics such as macroeconomics, microeconomics, international economics, econometrics, finance, and more.

Additionally, the conference part of the event includes paper presentations by participants, keynote speeches by, panel discussions, and networking opportunities. Participants can gain valuable insights into current research trends, receive feedback on their work ,and establish connections with peers and professionals in the field. Overall ,the ASECU Youth International Conference and Summer School serves as a platform for fostering academic exchange, collaboration, and intellectual growth among young scholars in the region, contributing to the advancement of economic knowledge and research in South and Eastern Europe and the Black Sea region. The 13th ASECU Youth International Conference and Summer School has been organized by Interdisciplinary Regional Development Center, University of Vlore "Ismail Qemali".

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ADVENTURE TOURISM: TOURISM CAVES IN VLORA MUNICIPALITY

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ABSTRACT

The paper is based on a study that was done on cave tourism, a very attractive form of adventure tourism in the Municipality of Vlora.

The paper begins with a detailed explanation of the phenomenon of karst and karst caves, focusing not only on their forms but also on the experience of the largest karst caves in the world.

In the following, data is provided regarding the legislation and institutions in Albania that support karst cave tourism.

The paper gives a lot of information about the municipality of Vlorë, dealing extensively with the karst caves according to the areas where they are located and data about them, in particular, their visitability is addressed.

Keywords: karst cave, Vlora, adventure tourism, visitability
JEL: Z31, Z33

1. INTRODUCTION

1.1 Karstic forms

Karst forms negative shapes from the dissolution of limestone and, more rarely, positive shapes from calcium deposits (stalactites and stalagmites) or witness mounds – "hummocks."

The variety of negative surface karst forms includes: lapies, sinkholes, dolines, uvalas, poljes, and canyons.

Lapies, or grooves and finger-like formations, are karst erosion forms created by the dissolution and mechanical erosive action of water on the surface of soluble rocks

Underground Karst Forms: Karst caves contain galleries, corridors, thresholds, siphons, lakes, water flows, and formations such as stalactites, stalagmites, solid waterfalls, and cave pearls.

Formation and Evolution of Caves: This is related to the development of karst in depth along fractures and fissures in limestone or gypsum. Over the years, due to dissolution, these fractures continuously expand. Caves are natural temples of great scientific, cultural, and touristic importance. Studying karst areas helps protect the environment from pollution.

The experience of countries with developed tourism shows that natural monuments are among the most visited natural sites by tourists. Karst caves stand out: the Castellana Caves (Italy) are visited by 500,000 tourists per year, generating an annual revenue of over 7 million euros.

Carst caves are:
- Natural Temples, True Natural Laboratories
- Offer breathtaking beauty and the mystery of the subterranean world
- Environments for treating certain diseases
- Tourist attractions
- Some caves are being used as hospitals and hotels.

1.2 Karst caves in the world

Caves are the most visited natural sites by tourists. Tourists visit natural monuments with pleasure, also paying the fee for the visit when:

Their values are studied and promoted, and they are included in sustainable development plans and strategies. They also become part of the country's tourist tours.

There are hundreds of thousands of caves with varying sizes and values: scientific, cultural, educational; true laboratories for natural processes; habitats for various species, including Neolithic humans.

Among the largest caves are:
- Mammoth Cave (644 km) in the United States, the largest in the world
- Optimisticheskaya Cave (153 km) in Ukraine, the longest in Europe
- Höhle (147 km) in Switzerland
- Cave of the Winds (32.2 km) in Romania, the largest in the Balkans
- Postojna Cave (22 km) in Slovenia, and others

1.3 Legal and institutional support for caves in Albania

- Legal support

- VVKM 451, dated 16.09.1993 "On the Proper Administration of Caves"
- Nr. VKM No. 365, dated 10.07.1995 "On an Amendment to KMD No. 451, dated 16.09.1993"
- Law No. 8906, dated 06.06.2002 "On Protected Areas"
- Law No. 9868, dated 04.02.2008 "On Some Additions and Amendments to Law No. 8906, dated 06.06.2002 'On Protected Areas'"
- The most recent law, May 2017
- KMD No. 807, dated 04.12.2003 "On the Rules for the Use of Caves"
- 2019_KMD No. 303, dated 10.05.2019 "Approval of the Revised List of Natural Monuments"

- Institutional support
- Ministry of Tourism and Environment
- National Agency for Protected Areas
- Regional Agencies for Protected Areas
- Regional Environmental Agencies
- Scientific Institutions of the country
- Tourism Institutions
- Civil Society Organizations: Speleological Associations
- Environmental Offices in prefectures, districts, and municipalities
- International Cooperation

2. Data regarding municipality of vlora

The Municipality of Vlora is bounded on the north by the Municipality of Fier, on the east by the Municipality of Selenica and on the south by the Municipality of Himara. The capital of the Municipality is the city of Vlora.

The surface of its territory is 616.85 km2, its population according to the 2011 Census counts 104.827 inhabitants, while according to civil state registry counts 194,147 residents. According to the census data, the population density in the municipality is 169.9 inhabitants/km2 and according to the civil state registry database it is 314.7 inhabitants/km2.

The municipality is composed of five administrative units: Vlora, Orikum, Vlora Center, Novosela and Shushica. The municipality administrates two cities (Vlora and Orikum) and 37 villages, whereas Sazani island is included as well.

2.1. Nature

The territory of *Vlora* Municipality lies in the *Fusha e Myzeqesë së Vlorës* (Vlora's Myzeqe area), in the coastal mountain ranges and partly in the Shushica valley. The Municipality includes the islands of *Sazan* and *Zvërnec*, the *Karaburun* peninsula, the *Narta* Lagoon and the Vlora Bay. On its long coast, from the Vjosa River estuary in the north near to Palasa in the south, two characteristic features are met: the low or accumulating coast (with sandy beaches, wetlands, lagoons) and the high, rocky, abrasive coast (with high, steep slopes, rocky shores and shingle beaches).

Its territory consists of terrigines (clays, conglomerates, sand, sandstones, etc.) and limestones, in which the karstic process (dissolution of the limestone rocks) is highly developed, from which many karstic caves are created. Its relief is flat, hilly and mountainous. It stretches from sea level up to heights of 2045 m (*Maja e Çikës* – Çika Peak). On the basis of the major morphological changes there are differentiated: hilly - mountainous ridges: Topallti - Lungarë - Çika and Sazan island - Karaburun peninsula-*Rrëza e Kanalit* (Canal Foot); Narta Plain, Dukati Valley and Shushica Valley.

2.2. Natural inheritance

The rich natural heritage of national value consists of:

- *Llogora National Park* (1010 ha) stretching from 487 m to 2,018 m above sea level. It is composed of limestone and terrigen. It has a mountainous relief with steep peaks and slopes. It is distinguished in the Mediterranean for its high biodiversity: about 1500 plant species or about 42% of Albania's flora; endemic, rare and endangered species, etc.; 105 species of birds, some species of mammals, among them there are rare ones; some nature monuments. It is a tourist destination for both flight and parachute racing.

- *Sazan-Karaburun Marine Protected area* (12,427 ha) is the first marine protected area declared by law in Albania (2010). It lies in the maritime belt, 1 mile nautical, around the island of Sazan and the peninsula of Karaburun. They are distinguished for a variety of coastal landscapes (small bays and beaches, capes, caves, steep slopes, etc.), and underwater: gorges, canyons, caves, a variety of

plant and animal habitats. There are about 36 species of marine fauna and flora of global importance. Posidonia underwater meadows, fish species, etc. are distinguished. There are several nature monuments and underwater historical values: antique, medieval and newer sunken ships; ancient inscriptions in Grama Bay, etc.

- *Karaburun Natural Park* (20,000 ha) lies on the homonymous peninsula; from sea level up to 1498 m (Gjipali Peak). It consists mainly of limestone; it has hilly-mountainous relief, with round ridges and steep slopes. Being uninhabited and a military area, during the communist period, it remained a "green brick" of the nature of high biodiversity in the Mediterranean where meadows, coniferous forests, oaks, macaque, endemic and sub-endemic plants, rare and endangered ones can be found. Present conditions show clear signs of damages.

The list of *nature monuments* counts 27 objects, ranking among the municipalities with the largest number in the country. They can be found: geo-monuments, hydro-monuments and bio-monuments. These temples of nature are visited by many tourists as rare natural curiosities. Of particular interest there are the karstic caves.

Vjosa-Narta protected landscape (19.738 ha) stretched from the Vjosa Estuary up to Vlora and up to 246 m above sea level. There are many marshes and lagoons, the largest - the Narta Lagoon, the Vjosa Estuary, its abandoned beds, canals, etc. It is known for its unique flora and variety of habitats. Around 800 species of plants grow here, which make up over 25% of total flora of the country; around 25 endangered species and two endemic species. Narta is an important IBA with up to 81,000 bird species, where pelicans are fed, where flamingos and mammals of regional, national and international importance reside. There are several nature and cultural monuments.

3. Karstic caves of the municipality of vlorë

Its territory has very favorable conditions for the formation of large caves. Among these conditions, we highlight:

- The extensive spread of soluble rocks
- The significant tectonic fragmentation of these rocks
- The rapid neotectonic development of the structural base
- Suitable climatic and topographic conditions

The karstic caves constitute another great natural asset of the Vlora Municipality. They are called temples of nature and contain many values. The fauna of the caves, due to the extreme conditions of living, isolated in eternal darkness, is distinguished for its special features and pronounced endemism.

Under these conditions, living creatures have lost their sense of sight, which is redundant, but have highly developed the sense of touch, organs in the form of tentacles and hearing. Nocturnal bats, living in large colonies in the darkest of cave environments, are tipical. Recent biospeleological studies have identified up to 14 species of bats, including endemic ones.

The karstic process is very much developed in the territory of Vlora municipality. This process has been induced by the large diffusion of dissolved limestone rocks, the large tectonic cleavage, the rapid neotectonic development of the structural plinth which are due to the appropriate climatic and topographic conditions. Special forms of surface karstic reliefs (funnels, pits, karst fields) and underground ones are associated with the karstic process, in which karstic caves are distinguished.

Several expeditions have been organized by foreign speleological groups, mainly Italians (GS Martinese, GS Neritino, Gruppo Puglia Grotte, GS Dauno, Stazione di Biol. Marine Univ di Lece, Apogon, University of Vlora etc.). Special help was provided by talented photographers of our natural values, including Fation Plaku, Albert Cmeta, etc.

Based on local population information, these incomplete explorations have discovered 16 karstic caves. Given the very suitable geographical and geological conditions for the formation of caves, we emphasize it is highly probable the presence of a larger number of karstic caves in these territories, which have to be discovered by future speleological explorations. The great richness in caves gives the limestone areas of Vlora municipality additional attractive values for speleological adventure tourism, which is attracting the attention of tourists.

It has to be noted that even for the discovered caves the exploration was partial, more so at the level of ascertainment. Therefore, the information on these

caves is very limited, but still sufficient to arouse

the interest of adventure tourism in the karstic caves of Vlora, which requires courage and special skills, but enables you to enjoy the stunning view so generously provided by the underground world.

Map of caves in the territory of the municipality of Vlora

The caves in this municipality are located on the hilly-mountainous ridges of Kanina – Çika, Sazan and Karaburun - Llogora.

Approximately 30 karst caves have been discovered. Given the favorable conditions for cave formation, it is likely that there are many more yet to be discovered through new speleological explorations.

3.1. On the hilly-mountainous ridge Kanina - Çika

1.Saint George Cave. It is located on the eastern slope of Çika, in the vicinity Tërbaç village, of the administrative unit Vranisht. It is also known by the names Bee's Cave and Red Rock. It is a karstic cave, created in limestone. The known length is about 100 m, while its width and height are about 3-5 m. About 8 m below the entrance to the cave an early wall is found. The cave is thought to have been used by Illyrian Queen Teuta. It has the status of a nature monument. It can be visited along the pedestrian trach Vlora-Kotë-Tërbaç.

2. Nightingales Cave. There are a group of small karstic caves in the limestones of Mount Çika, near the village of Tërbaç, of the administrative unit Vranisht. Also known as the Peshnja Caves. The braves or nightingales took refuge in here from the pursuit of the invaders. The village of Tërbaç protected and nurtured them. Its length reaches 20-30 m, width 10-12 m and height 10-15 m. They have historical and touristic values. They can be visited along the rural road Vlora-Kotë-Tërbaç - Peshnjë pedestrian trak. It has the status of a nature monument.

3.Lipe's Cave. It is located near the village of Old Tragjas, the administrative unit of Orikum. Created in limestone trunks, it is a shallow cave, only a few meters; about 50 m long, about 5 m wide and 2-3 m high. It can be visited along the Vlora – Old Tragjas pedestrian track.

3.2 In Llogora national park

4. Pigeons Cave. It is located on the eastern slope of Canal Foot / Rrëza e Kanalit mountain, near the neck of Llogora, in Llogora National Park. It is a karstic cave, created in limestone. The known length is about 80 m, while its width and height are about 10 m. It can be visited along the Vlora street - center of Llogora National Park pedestrian track.

5. Pasture Mainland. It is located near the Pigeons Cave, on the eastern slope of mountain Canal Foot -Rrëza e Kanalit, near the neck of Llogora, in Llogora National Park. It is a vertical cave, about 30 m deep and about 2-3 m in diameter. Its bottom is filled with stones of various dimensions. It can be visited along the Vlora street - center of Llogora National Park pedestrian track.

3.3 On the west slope of the Rrëza e Kanalit – Canal Foot Mountain

support anti-fascist resistance. "Ingliz" is the pronunciation of the inhabitants of Dukat village of that time for the word "Englishmen".

6. Shpella e Gramës (Grama Cave). Grama Bay and cave are located on the west coast of the of the Canal Foot Mountain. The bay sits a few hundred meters into the ground, with rocky shores, bays, perhaps even underwater caves. It has been used as a ship shelter during storms. It stands out as one of the most special historical surprises. Here is the quarry of Grama, where the old inscriptions are found, which, according to historians, date back to the 3rd century BC and continue until the 19th century. In antiquity, slaves have engraved names and other notes, which constitute important messages for scholars. Writings engraved by sailors can also be found, through which they pray and express gratitude to Poseidon, the god of the sea. There can also be found drawings and symbolic signs, such as boats, crosses, anchors, shields, etc. near the writings. That is why it is called the Grama's Bay and the Grama Cave (Writings. "*Gërmë*" stands for "letter" in Albanian). It possesses historical and touristic values. It is a natural monument. It can be visited by boat from Vlora or Himara.

7. Nexhajve Cave. Lovated on the water's edge on the coast of the western slope of mountain Canal Foot (Rrëza e Kanalit). There are two entrances, one directly from the seafront and the other is reached by plunging into the water and a few meters into the cave. The first part is covered by seawater, while the second part lasts about 50 m, in the form of a very wide and high corridor, inside the rock. Full explorations will be able to determine its real size. It can be visited by boat from Vlora or Himara

8. Englishmen Cave. It is located about 100 m over the waters of the Ingliz Bay, located on the shores of Cows' Stream Estuary, which flows to the western slope of the Kollovoçka (Mountain During the years of World War II, the Cairo-based SOD (Special Operations Directory) established a naval base for its missions operating in Albania to the cave bears this name, formerly called the cave of "Gjon Gjin Leka". The English military provided residents with clothing, food, and especially some yellow tasty sugar, unknown to them, as well as raincoats, which the shepherds used to protect them from rain. It can be visited by boat from Vlora or Himara, but also by land road on the Vlora - New Dukat road - the pedestrian track that crosses the mountain ridge and reaches the sea.

3.4. Caves on Karaburun peninsula

Karaburun Peninsula is distinguished for its large number of karstic, underwater and semi-underwater caves, of which some are known up to now: Haxhi Ali's Cave, K1, K2, K3, Laurel/ Bay Leafe Cave, etc. Alongside them there are other caves at above sea level.

9. Haxhi Ali's Cave. It is located between the capes of Gjuhza and Gollovec on the northwestern edge of the Karaburun peninsula; between the 40° 25' 51" north latitude and 19° 18' 20" east longitude.

By far, it is considered the largest sea cave and the most famous on the Albanian coast. Its entrance, in the form of a dome, directly above the sea is 45 m high. Therefore, you can enter the cave directly from the sea only by small boat or boat with a flat bottom as it crosses over an underwater threshold, about 0.8 m deep. The entrance corridor is about 40m long, 20 - 35m wide and 5m deep.

Its first part, called a "pool", resembling a "lake", inside a large dome-shaped hall is about 60m long and up to 40m wide on the surface of the water. The maximum height of the ceiling, in the form of a dome, is about 18 - 20 m. Here the depth reaches about 10-11 m.

This hall is surrounded by wet, vertical rocky slopes and with soot traces. Some areas on these walls are solid waterfalls and stalactites formed by calcium carbonate precipitation.

Above these slopes there are numerous pockets, leading to galleries and rooms inside the rock where there are sweet water springs. These pockets and galleries are still unexplored. Therefore, the

10. Karaburun Cave (K1). It is an underwater cave. It lies southeast of the coast, between 40° 25' 00" north latitude and 19° 17' 55" east longitude. The entrance to this cave, up to 15 m below sea

Canal Foot - Rrëza e Kanalit). The known part of the cave is about 40 m long. It is full of stalactites and stalagmites of rare beauty.

exact dimensions of the cave are not known yet. In total, the known part of the cave (hall plus entrance corridor) is about 100 m long. Many indications tell for a very large cave. It is mentioned for the special beauty of stalactites and stalagmites. Dozens of species of fish and rare marine life live in its waters.

At its entrance there are found ancient amphora fragments of the first centuries of our era. This cave has constantly attracted the attention of foreign and Albanian sailors.

It was once known as the "Illyrian Cave", while as of today it is known as the Haxhi Ali's Cave, who was a well-known Ulcinj seaman of the 17th century. This great sailor had set up in this cave the harbor, where he took refuge with his ships and men. The favorable geographical position of Karaburun enabled him to protect for some 22 years the Albanian coasts from Venetian, Saracen attacks from Malta and Egypt, the Spanish, English and French and pirates robbing the shepherds in Karaburun. He was killed in clashes with the Venetians. He was buried along with his son in Sazan, but their graves have not been found. It is said that his tomb is in the sea. The ships, as they were passing by the cave, sounded sirens and poured bread and oil into the sea for his soul. Such custom is still carried out by some of the Dukati inhabitants who feed cattles on the Ravena plateau. On every August morning they throw bread and oil into the sea for the sake of Haxhi Ali.

Haxhi Ali's Cave is the most beautiful site of the Protected Marine Area Sazan - Karaburun. This cave, a nature monument, can be visited by ship or boat.
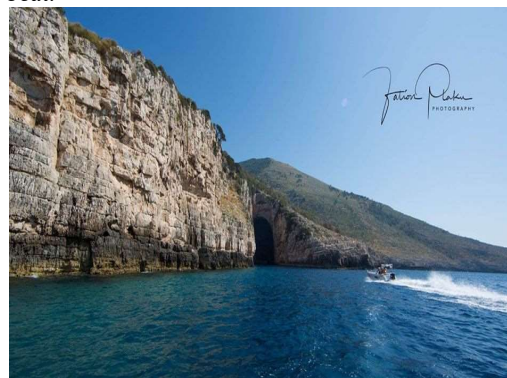
level, is hardly distinguishable between several small caves on the shore of a sea bay. Next up lies the Great Room under water.

It is about 25 m long. This underwater cave is

known for its diverse wildlife: algae, sponges, fish, etc. It can be reached through sailing by ship or boat.

11. Hilqe Peak Cave (K2). It is a semi-underwater cave, located on the southeastern extension of the coast; between geographical coordinates: 40° 24 '35" north latitude and 19° 18 '33" east longitude; on the shores of a small bay winding in the sea between two steep ridges; at the foot of Maja e Hilqes (731 m).

Upon entry, at about 8 m deep, it develops in the form of a tunnel, half submerged, about 50 m long and about 3 m wide. This tunnel narrows until it closes. This cave is known for its diverse wildlife: algae, sponges, fish, etc. It can be reached by ship or boat sailing from Vlora or Orikum.

12. Tunnel Cave (Hilqe Peak) (K3) . Located very close to the K2 cave; in the same bay; between the same coordinates and is half underwater. Its large, half-submerged inlet is accessed by boat. Further on, the cave is in the shape of a semi-submerged tunnel, about 100m long and 9-13m deep, winding inside a rock to emerge again at the edge of the open sea. It can be reached by ship or boat sailing from Vlora or Orikum.
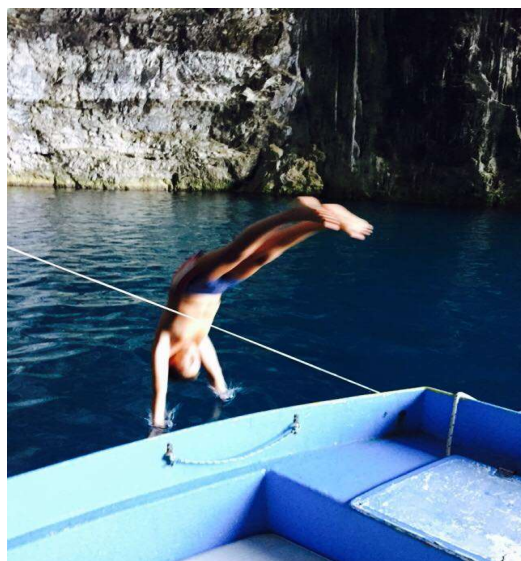
13. Laurel/ Bay Leafe Cave. It is located on the seafront in the bay of Laurel/ Bay Leafe Cave, which goes deep into the shore. To get into this cave you have to swim about 15m. The bottom of the first part is covered by the sea, while the rest continues to a small sandy beach, behind which is extended a very wide and high hall, full of fallen stone blocks. It can be reached by sea or by road from Vlora or Himara and by land, taking the footpath Old Orikum - Marmiro church - Ravenna plateau – Bay Leaf Stream - Cave.

14. Duke John's Cave. The Duke John's Cave is located near Bristan Bay; about 400 m above sea level. It is 30-40 m high, 20-25 m wide and high, with many narrowings and lodges like domes, puddles of water, concretions of strange and rare beauty. It has scientific and touristic values. It has the status of a nature monument. It can be reached by the footpath Old Orikum - Marmiro church - the western slope of the Canal Foot / Rrëza e Kanalit Mountain.

15. Daçëve Cave. It is located about 400m above sea level, on the western slope of the Canal Foot – Rrëza e Kanalit mountain, near the neck of Petruna. It is about 15-20 m long (the known part), with fallen stone blocks, but there can also be found some very beautiful stalactites and stalagmites. It is

reached by sea from Vlora or Himara, but also by land on the footpath Vlora - Old Orikum - Marmiro church - neck of Petruna - cave.

16. The hidden cave. Concealed among several very small bays, it is located in the bay of Llovizit on Karaburun. It remains unexplored. It begins with a fairly high gallery and a floor covered by seawater. It can be visited by boat from Vlorë toward the bay of Gramë.

17. Blue cave. Named after the blue color of the water. Located to the west of Karaburun, along the route from Vlorë to Gramë; It remains unexplored;

It starts from the sea with a rugged entrance, which after a few meters' branches into narrow galleries. It can be visited by speedboat.

18. Channel Cave. It is located on the southeastern edge of the eastern slope of the Ravenna plateau, about 70-80m above sea level; in the vicinity of Old Orikum, the Orikum administrative unit. It is a karstic cave, formed in limestone. The known length is about 60 m, while its width and height are about 4-6 m. It is reached through the footpath Vlora - Old Orikum.

3.5. Cave on Sazan Island

19. Underwater Cave of the The mouth of hell (Gryka e Xhehnemit) It is located on the western slope of Sazan Island, deep within the Mouth of Hell. It also emerges on the island's surface in the form of a deep, still unexplored well. The entrance is at a depth of 10-12 meters. It extends within the western slope of the island with galleries filled with water. The internal surface area of the cave is approximately 2000 square meters.

4. FUTURE WORK

According to the latest information, in the territory of the Vlorë Municipality, there are also these other karstic caves:

1. Kavasalli Cave (Tragjas)
2. Kozeres Cave (Dukat i Vjeter)
3. Saint Andreut Cave (Karaburun)
4. Çika Cave on the western slope of the mountain Çikes
5. Sterra of Kujunxhi
6. Talos Cave
7. Njashes Cave
8. Rrapi Cave
9. Panase Cave

There are certainly other caves that need to be discovered, explored, and evaluated.

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Students contributions

Student presentations- Session 1

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Legal frameworks for environmental protection in Europe and neighboring countries, focusing on civil protection measures for national parks in Greece and Albania

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Abstract

This paper provides an overview of the legal frameworks for environmental protection in Europe and neighboring countries, focusing on civil protection measures for national parks in Greece and Albania. It explores how these countries address environmental concerns through international agreements, regional directives, and national legislation. The European Union has established strong legal instruments, such as the Habitats Directive and Birds Directive, which mandate the creation of protected areas and conservation measures. Greece, as an EU member state, has adopted these directives and established national parks, supported by the Law on Protected Areas and Environmental Impact Assessment procedures. Greece has also implemented civil protection measures, including awareness campaigns, educational programs, and information dissemination to residents living near national parks, emphasizing conservation, responsible tourism, and wildfire prevention. Albania, as a neighboring country, has introduced its own legal measures, including the Law on Protected Areas and the Law on Environmental Protection, although implementation and enforcement face challenges due to limited resources. Also, ongoing efforts aim to strengthen the legal framework and enhance civil protection measures to effectively preserve national parks in both Greece and Albania. This paper demonstrates the commitment of these countries to environmental conservation while striving to balance conservation goals with sustainable development.

Introduction

The "play of borders" can be understood through the lens of the European Neighborhood Policy (ENP), which represents a "frontier-like logic of creative destruction and constant recombining of spaces and times." The ENP, as the shifting frontier of EU power and influence, exemplifies this process where re-bordering and cross-bordering work to produce ever-evolving constellations of sovereignty, governance, wealth, and power. This dynamic goes beyond the visible hardening of EU external borders, instead examining the "productive" making of the European neighborhood as the EU's extended borderscape. In this view, the concurrent openness and closure, collaboration and securitization, are not contradictory but rather integral parts of the same project of constructing space for Europe (Scott, J. W., 2015). Territorial partnerships, such as Euroregions, can significantly impact not only the cooperating organizations but also their surrounding region, as these alliances aim to achieve the broader objectives of cross-border cooperation (CBC). However, the process is often disrupted by various barriers, and the key CBC stakeholders play an important role in overcoming at least some of these challenges (Kurowska-Pysz, et al., 2018).

The success of cross-border cooperation (CBC) requires the involvement of the media to reduce psychological and social barriers. According to the European Charter of Border and Cross-border Regions, active CBC must be based on removing barriers in the cross-border flow of production factors and environmental conditions. Also, different factors affecting CBC in Euroregions in a negative way, categorizing them into two groups: 'internal' barriers resulting from the specific circumstances and CBC process within the Euroregions and their partners, such as communication, resource availability, and knowledge; and 'external' barriers generally independent of the Euroregions, relating to the cross-border environment, such as legal regulations, administrative rules, economic and

social conditions, EU cohesion policy, and funding availability (Kurowska-Pysz, et al., 2018).

The idea of this paper primarily focuses on protecting Greece and Albania's national parks with support by the political leadership of both countries. That involves implementing new protection policies for the Pindos National Park in Greece and the Fir of Hotova-Dangelli National Park in Albania. The whole initiative was created with the purpose of educating and informing the public, the local communities and possible visitors about the protection of the natural environment and the significance of national parks. The project also, seeks to raise the awareness between the citizens of both regions. Also, the matter can be achieved through some seminars that provide accurate information about the importance and value of these parks. Another aspect of this project is fire prevention utilizing new technologies for these specific areas, such as the application of thermal cameras and drones for the areas where camera installation is not feasible.

Legal Framework of Greece

Recognizing the value of its natural heritage, Greece has developed a robust legal framework for environmental protection and nature conservation. It has adopted international conventions and EU directives since the 1970s, while further enriching the framework with national regulations since the 1950s. The current legal framework covers a wide range of environmental issues, with a particular focus on the protection of the country's protected areas. The National system of protected areas consists of all areas under protection status aimed at effectively preserving biodiversity and other ecological values. These categories were initially defined by Law 1650/1986 "On the Protection of the Environment" and its subsequent amendments.

Categories of protected areas: a) Biodiversity protection areas: Terrestrial, aquatic, marine, or mixed areas with significant natural habitats and species that require protection. These include areas of the Natura 2000 network. b) National parks: Large natural or semi-natural areas with significant ecological functions and characteristic species. They can include multiple Natura 2000 areas and/or Biodiversity Protection Areas. c) Wildlife refuges: Areas suitable for the development of wild fauna and flora or for species reproduction and feeding. They can include ecological corridors between protected areas. d) Protected landscapes and natural formations: Natural sites or individual elements with significant ecological, geological, or geomorphological value, such as trees, shrubs,

waterfalls, caves, and coral formations. They can be designated as natural monuments.

Under previous legislation, protected areas have also been designated as National Parks, Aesthetic Forests, Natural Monuments, Controlled Hunting Areas, and Game Breeding Stations Organization for the Natural Environment and Climate Change (NECCA). (n.d.).

Legal Framework of Albania

The evolution of Albania's primary environmental protection framework consists of- three distinct periods reflecting the country's broader economic development. The first period from 1990-2000 marked the country's post-communist transition, when the foundations of a modern environmental legal system rooted in democratic principles were first established. The following 2000-2010 decade saw Albania's economy advancing beyond the transitional stage, with the country also intensifying its efforts to join the European Union. The current 2010-2020 period has witnessed Albania creating much of its new environmental legislation, including various types of laws, government decisions, regulations and standards, largely driven by the imperative to align with EU environmental acquis as part of the EU accession process. Overall, the 2010-2020 period saw Albania make significant progress in aligning its environmental legal framework with EU standards as part of the EU accession process.

In 2011, the Albanian parliament approved a new Law on Environmental Protection (Law No. 10431) that replaced the previous 2002 law and transposed the EU's Environmental Liability Directive 2004/35/EC. The new 2011 law provided a stronger legal basis and framework for further transposition of various EU environmental directives, requiring the development of many new implementing regulations and by-laws. During this period, Albania also transposed other key EU environmental directives, including the 2011 Law on Environmental Impact Assessment (Law No. 10440), which fully transposed the EU's EIA Directive and its amendments, and the 2011 Law on Environmental Permitting (Law No. 10448), which established measures for permitting and controlling emissions from certain polluting activities to achieve a high level of environmental and human health protection.

The Albanian Law on Environmental Protection, enacted in 2011, is considered an integrating primary law by European standards. It contains 12 chapters and establishes principles, as well as analyzing them, while also addressing the division of powers and decentralizing central environmental

institutions to other enforcement bodies. The law aims to provide a high level of environmental protection, preserve and improve the environment, prevent and reduce risks to human life and health, improve quality of life for present and future generations, and enable sustainable development in the country. It incorporates definitions related to climate, quality of life, and sustainable development, reflecting the complexity of environmental components.

The environmental protection legislation envisages the establishment of various agencies and public entities to administer and enforce the legal framework. The key institutions include the Ministry of Environment (MoE), the National Environmental Agency (NEA), the State Inspectorate of Environment and Forests (SEIF) as a specialized control body, and the National Agency of Protected Areas (NAPA). These institutions have both central and regional/local units located across Albania's 12 administrative districts, in line with the country's new Territorial-Administrative Division law of 2015.

The primary challenge with Albania's environmental legal framework is not the development of the laws, but the lack of effective implementation and enforcement. Poor implementation stems from factors like lack of adherence, inability to measure compliance, weak enforcement procedures, insufficient institutional capacity, and dysfunctional distribution of competencies across ministries. While EU acquis transposition is analyzed, this does not always extend to ensuring integrated environmental protection as per EU directives. Some laws also lack supporting by-laws. Other issues include lack of coordination between laws, need for additional by-laws, absence of practical enforcement provisions, and unclear relationships between overlapping laws. Establishing environmental agencies has not ensured effective implementation, as staff expertise, training and roles need to align with the evolving technical and scientific nature of environmental protection (Misho, 2019).

Examples of countries cooperating to protect shared environments

The Alpine Convention: The Alpine Convention is an international treaty joined by Austria, France, Germany, Italy, Liechtenstein, Monaco, Slovenia, Switzerland, and the European Union, covering a total geographic area of 190,700 km². Established in 1995, the convention serves as an early example of countries cooperating to implement the principles of sustainable development, even before the UN Sustainable Development Goals. The Alpine region is renowned for its natural wonders as well as its long history of human habitation and cultural landscapes. Achieving a balanced approach to environmental protection, economic development, and social wellbeing is a key priority, with sustainable development as a central guiding concept. This requires considering the needs and perspectives of local populations and raising awareness about the inherent value of a healthy natural environment as the foundation for activities like agriculture, tourism, and recreation, as well as for vital ecosystem services. Overall, the Alpine Convention demonstrates how neighboring countries can come together to cooperatively manage a shared, ecologically and culturally significant region in a sustainable manner (Alpconv, n.d.).

The Danube River Basin: The International Commission for the Protection of the Danube River (ICPDR) is a transnational body established to implement the Danube River Protection Convention, the major legal instrument for cooperation and transboundary water management in the Danube River Basin. The ICPDR has been the platform for the implementation of the EU Water Framework Directive and the EU Floods Directive in the basin. It brings together national delegates, representatives from ministerial levels, technical experts, and members of civil society and the scientific community to ensure the sustainable and equitable use of the Danube's waters. Since 1998, the ICPDR has promoted policy agreements, set joint priorities, and developed tools to address key issues like pollution reduction, ecosystem protection, and flood risk management. The ICPDR's Contracting Parties, which include Austria, Bosnia and Herzegovina, Bulgaria, Croatia, Czech Republic, Germany, Hungary, Moldova, Montenegro, Romania, Slovakia, Slovenia, Serbia, Ukraine, and the European Union, as well as Italy, Switzerland, Poland, Albania, and North Macedonia who cooperate under the EU directives, have committed to developing coordinated international River Basin Management Plans and Flood Risk Management Plans for the Danube River Basin (International Commission for the Protection of the Danube River [ICPDR], 2023).

The Baltic Sea: The Baltic Marine Environment Protection Commission, also known as the "Helsinki Commission" or "HELCOM", was established in 1974 along with the Convention on the Protection of the Marine Environment of the Baltic Sea Area (the "Helsinki Convention"). The Helsinki Commission is an intergovernmental organization that meets annually, with all ten Contracting Parties participating: Denmark,

Estonia, the European Union, Finland, Germany, Latvia, Lithuania, Poland, Russia, and Sweden. The Commission adopts recommendations, decides on the budget, and makes other key decisions by consensus, with the chairmanship rotating between the Contracting Parties every two years. The Helsinki Convention was originally signed in 1974 by Denmark, Finland, the German Democratic Republic (GDR), the Federal Republic of Germany (FRG), Poland, Sweden, and the Union of Soviet Socialist Republics (USSR) to address environmental challenges from industrialization and human activities, and was updated in 1992 to include Estonia, the European Union, and Latvia, entering into force in 2000 and being amended as necessary to follow developments in international environmental and maritime laws. The Convention covers the entire Baltic Sea area, including inland waters and the catchment area, and commits the Contracting Parties to protect the marine environment from all sources of pollution and to take measures for the conservation of habitats, biodiversity, and sustainable use of marine resources. The Contracting Parties are represented by Heads of Delegation, who meet at least twice a year in addition to the annual Commission meetings, with HELCOM using the ISO 3166-1 alpha-2 (two-letter) country code abbreviations to refer to the Contracting Parties (HELCOM, 2023).

The North Sea: The OSPAR Convention for the Protection of the Marine Environment of the North-East Atlantic was adopted in 1992 to guide international cooperation for the protection of the marine environment in that region. In June 2023, with the support of the EU, OSPAR strengthened the conservation objectives of the largest marine protected area in the North-East Atlantic. OSPAR published its latest quality status report in September 2023 (European Commission, 2023).

According to Dominic Pattinson, the Executive Secretary, protecting the marine environment and securing OSPAR's vision of a clean, healthy, and biologically diverse North-East Atlantic that is used sustainably has never been more critical. The combined impacts of pollution, over-exploitation, and climate change threaten the biodiversity and ecosystems that underpin the provision of food, jobs, and enjoyment for millions of people. The only way to achieve this vision is by working together.

Since 1972, the Contracting Parties to the OSPAR Convention have worked to identify threats and implement measures to combat them. OSPAR has pioneered monitoring and assessment, and set internationally agreed goals for participating governments. OSPAR's success makes it a vital mechanism for regional cooperation and protection efforts. The ocean does not respect boundaries, and OSPAR provides a forum for Contracting Parties and Observers to agree on cost-effective actions. OSPAR's Secretariat and budget leverage resources towards a healthy environment. Also, OSPAR's work is underpinned by science, monitoring, and assessment, with implementation reporting procedures. By working together, OSPAR achieves more impact than alone (OSPAR Commission, 2024).

The Mediterranean Sea: The Barcelona Convention, established in 1995, builds upon the United Nations Environment Programme's (UNEP) Mediterranean Action Plan that was initiated in 1975. The primary aim of the Barcelona Convention is to protect the marine and coastal environment of the Mediterranean region while also promoting regional and national plans to achieve sustainable development in the area (European Commission, 2023).

UNEP/MAP and the 21 Contracting Parties, including the EU, have built a comprehensive framework to promote sustainability in the Mediterranean. Their work is guided by a 6-year Medium-Term Strategy (MTS), the latest of which was adopted in 2021 for 2022-2027. The MTS 2022-2027 aligns with the 2030 Agenda for Sustainable Development and contributes to the achievement of the Sustainable Development Goals (SDGs). It also encompasses implementation of other global frameworks, such as the Post-2020 Global Biodiversity Framework and the Paris Agreement. The vision of the MTS furthermore, is to progress towards a healthy, clean, sustainable, and climate-resilient Mediterranean Sea and coast, where the 2030 Agenda and its SDGs are achieved through the effective implementation of the Barcelona Convention and its Protocols (UNEP/MAP, 2023).

The environmental areas this project is about Fir of Hotova Dangeli

The National Park "Bredhit i Hotovës-Dangëlli" (Fir of Hotova-Dangelli) in southeastern Albania was expanded in 2022 to cover an area of 36,003.76 hectares. It is the largest national park in Albania, located in the highlands of Dangelli at elevations ranging from 230m to 1,663m. The Park is known for its high biodiversity and can be considered the "natural lung" of southern Albania. It features a diverse range of ecosystems, including one of the largest forests of Macedonian Fir in the Balkans, which is considered an important Mediterranean plant relic. Other forest types include Bunga, Maple, Black Pine, and Mediterranean species like Qarr, Shkoze, and

Mëlleze. The Park has a rich flora, including many medicinal plants, and diverse fauna, with 11 amphibian species, 19 reptile species, 14 fish species, 142 bird species, and 46 mammal species, including brown bears, wolves, and lynx. Geologically, the park features tectonic activity with hot mineral springs and vapors. It has a dense hydrographic network with the Lengarica River cutting through the highlands. In addition to its natural values, the park also contains important cultural and historical sites that have been designated as cultural monuments (Parku Kombëtar Bredhi i Hotovës-Dangëlli, n.d.).

Pindos

The Northern Pindos National Park is the largest terrestrial national park in Albania, covering an area of nearly 2 million acres. It encompasses multiple other protected areas, including national parks, Natura 2000 sites, wildlife refuges, a geopark, and a biogenetic reserve. This makes the park a region of immense ecological, environmental, and cultural value at the national, European, and global levels. The Management Agency of the North Pindos National Park has the mission of protecting and managing the national park and its surrounding zones since 2002. The agency works to safeguard the park's ecological, aesthetic, and cultural assets, while also promoting sustainable development and the continued harmonious human presence in this area of outstanding natural beauty. The park's website provides information and educational materials about the unique characteristics of the Northern Pindos region, as well as the multifaceted efforts of the Management Agency. The agency hopes this content will inform, sensitize, and encourage visitors to (re)discover the national park. Visitors are welcome at the park's information centers to learn more about exploring the Northern Pindos. Ultimately, the preservation and protection of the natural environment is both a privilege and a duty for the state and its citizens, as reflected in the management and promotion of this exceptional national park (Northern Pindos National Park, n.d.).

Aims of the project

The main objectives of this project are: a) To unite the two neighboring regions, fostering cooperation and solidarity, which will lead to a shared commitment to protecting the national parks – Pindos National Park in Greece and Fir of Hotova-Dangelli National Park in Albania. b) To raise awareness among the residents about the challenges that take place in guarding and protecting such large and biodiverse habitats. c) The next goal is fire prevention through modern technology such as the installation of thermal cameras ensuring a swift response from fire brigades of either Greece or Albania. d) To deploy drones equipped with thermal cameras for better coverage in hard-to-reach forest areas.

This information will be primarily accessible to fire brigades and residents through a specific application designed for efficient evacuation during fires, applicable in both regions. With the use of cameras and drones we aim to ensure an immediate response of fire brigades in both countries. For instance, if a fire breaks out in Pindos, aerial support from the Albanian side can be promptly dispatched for a swift resolution. Also, the reverse process will take place in case of fires in the Albanian, Fir of Hotova – Dangeli.

Why is this project important?

Observing the recent trend of increasing wildfires, it is important to expand our means and resources through collaboration with neighboring regions to ensure the timely extinguishment of fires. This ensures the protection of Greek forests as well as neighboring ones. However, it can also face many problems that will make the program's work more difficult. One of these problems is human activities such as illegal logging and excessive tourism, especially during the summer period in national parks, which pose a high risk of creating fire outbreaks. Similarly, during the winter period, the flow of visitors must be controlled due to the extreme weather conditions prevailing in these specific areas and should only be done by experienced and specialized visitors. Additionally, large influxes of visitors can disrupt the flora and fauna, risking endangered animals or plants. Finally, the burden on local communities, as some protection measures, such as restricting access to certain areas or limiting the use of natural resources, can negatively impact the local communities that depend on these resources.

What is its added value?

With the implementation of this project the value of the parks will become evident. The actions taken will improve the quality of life for residents living near the parks by providing spaces for entertainment and recreation for both locals and visitors. The endeavor undertaken will consequently enhance the regional life and particularly the economy, by stimulating a dynamic tourism model. Therefore, the parks will deliver a range of community and environmental benefits,

ultimately boosting people's quality of life. In addition, by implementing the project that aims to restore the natural environment within the national parks, can contribute to the restoration of biodiversity and support for species and ecosystems that have been damaged by human activity or natural phenomena. Finally, executing this project will provide an opportunity to improve the management of natural resources within national parks, thereby the areas efficiency and sustainability will be boosted

Target Groups

This project targets the region of Epirus from the Greek side, specifically the prefectures of Ioannina and Grevena, where the national park of Pindos is primarily situated. On the Albanian side, it includes the region of Southern Albania and the prefectures of Gjirokastër and Korçë. It is also directed towards involving the civil protection agencies of the two countries, the forest authorities, the local fire brigades of the area, as well as the residents and visitors of the areas where the national parks are located.

Partnership Model Proposal between Greece and Albania

The partnership model consists of:
Municipality of Ioannina: Municipality of Ioannina: Ioannina, also known as Ioannina or Giannena, is a city in Epirus, the seat of the municipality of Ioannina and the capital of the regional unit of Ioannina. They are also the headquarters and largest city of the Epirus region as well as the decentralized administration of Epirus - Western Macedonia (Municipality of Ioannina, n.d.).
Civil Protection of Greece and Albania: Civil Protection refers to certain strategies and actions aimed at protecting people and the environment in a context that includes all possible disasters. In addition, it is considered an interdisciplinary field as it contains science and the use of technology to reduce the likelihood of disasters and their effects. Political protection is implemented by each government and requires the commitment of politicians, the regulation of institutions and the participation of members of society. With reference to its activity, prevention measures taken and its mobilization in emergency situations are included. Some examples are search, rescue, medical support and temporary housing. Finally, disaster protection is considered a comprehensive, comprehensive approach to protecting the world before, during and after disasters (Panagopoulos, 2022).

Greece: Civil protection aims to safeguard the lives, health, and property of citizens from natural disasters, technological accidents, biological, chemical, and nuclear incidents, as well as other emergencies during peacetime. It also focuses on preserving material and cultural assets, primary production sources, and the country's infrastructure to minimize the impact of disasters. To achieve these goals, plans and prevention programs are developed for each risk category, readiness measures are taken, prevention, response, and recovery actions are undertaken, human resources are utilized, public and private means are employed at national, regional, and local levels, and recommendations are submitted to the relevant ministries for legislative reform (Civil Protection, 2002).

Albania: The purpose of Albania's civil defense system is to reduce the risks from various disasters and guarantee the protection of human life, living things, property, cultural heritage, and the environment. This is achieved through strengthening the civil defense framework, defining the responsibilities of institutions and structures within the system, enabling international cooperation, outlining the rights and obligations of citizens and private entities, as well as providing education, training, and inspection. Albania's geographical characteristics make it prone to natural disasters such as floods, fires, earthquakes, landslides, and snow-related disruptions. Additionally, the increasing risks of environmental disasters due to urbanization and industrialization, as well as potential threats from terrorism and epidemics, necessitate a robust civil defense capability (AKMC, 2024).

Municipality of Gjirokastër: The city of Gjirokastra is vivid and atmospheric and is often referred to as the "City of Stone." As being described, "It was a strange city, and seemed to have been cast up in the valley one winter's night like some prehistoric creature that was now clawing its way up the mountainside. Everything in the city was old and made of stone, from the streets and fountains to the roofs of the sprawling age-old houses covered with gray slates like gigantic scales." Also, the city has a unique character and historical significance, which is an UNESCO World Heritage site in Albania that needs support to sustain its cultural heritage and ensure its future generations can inherit its legacy. Furthermore, according to Gjirokastra's pre-Ottoman history, some significant moments are its time under Ottoman rule, its importance during King Zog's reign, and the efforts made by the communist regime to preserve its unique cultural heritage by

declaring it a "Museum City" in 1961 (Gjirokastra, n.d.).

Municipality of Korçë: Korçë is a city located in southeastern Albania that has a rich historical background. It began as a feudal estate in the 13th century and grew to become a center of commerce and trade in the 17th, 18th, and 19th centuries. The city played an important role in the development of Albanian culture, being the site of the first school to use the Albanian language in 1887. Korçë has also experienced periods of occupation by various powers, including the Greeks, French, Italians, and Germans, before being restored to Albania in 1944. Today, the city lies on a fertile plateau surrounded by high mountains, and its economy is focused on agriculture, food processing, and light industry. Despite a decrease in population in recent years, Korçë remains an important cultural and economic center in southeastern Albania ("Korçë," n.d.).

A common characteristic of these three regions is that they are characterized by mountainous terrain and are landlocked, meaning they do not have access to the sea. Regarding the municipalities of Gjirokastër and Korçë, an additional characteristic is that they border each other, and both municipalities entirely encompass the Fir of Hotova - Dangelli National Park. On the Greek side, in the region of Ioannina, the majority of the Pindus National Park falls within its jurisdiction. Another shared characteristic of these three regions is their status as border regions based on their geographical location between the two countries. Lastly, the two national parks form a natural continuum and represent significant cultural heritage for their respective countries.

Action plan

WORK PACKAGE 1: Inspection and Preparation Action
1.1: Proposal Preparation Actions Action
1.2: Project Management & Administration Action
1.3: Partner Meetings Action
1.4: Project Implementation Quality Assessment Action
1.5: Inspection
WORK PACKAGE 2: Organization and Communication Action
2.1: Development of Communication Strategic Plan Action
2.2: Fully Accessible Website according to WCAG 2.0, AA Standards Action
2.3: Organization & Implementation of Info Days Action
2.4: Participation in Targeted Exhibitions Action
2.5: Final Project Conference
WORK PACKAGE 3: Information Action
3.1: Residents' Information Seminar Action
3.2: Communication Materials and Information Leaflets Action
3.3: Media Promotion Campaigns Action
3.4: Greece-Albania Civil Protection Meeting Action
3.5: Meeting among the Municipalities of Ioannina, Gjirokastër, and Korçë
WORK PACKAGE 4: Technical Actions Action
4.1: Development of Electronic Application Action
4.2: Installation of Thermal Cameras Action
4.3: Purchase of Drones Action
4.4: Installation of Firefighting Hydrants Action
4.5: Creation of Fire Protection Zones
WORK PACKAGE 5: Economic Evaluation Action
5.1: Analysis of Economic Budget Action
5.2: Resolution of Financial Issues Action
5.3: Cost and Investment Return Analysis Action
5.4: Analysis of Financial Statements Action
5.5: Final Program Evaluation

Conclusion

The European Neighborhood Policy (ENP) represents a dynamic "frontier-like logic" where EU borders are constantly reshaped through re-bordering and cross-bordering, leading to evolving sovereignties and governance. Successful cross-border cooperation (CBC) within Euroregions, hindered by internal and external barriers, relies heavily on media involvement to reduce psychological and social barriers. This paper focuses on a project to protect Greece's Pindos National Park and Albania's Fir of Hotova-Dangelli National Park, emphasizing public awareness, fire prevention using thermal cameras and drones, and cross-border collaboration between fire brigades. The project underscores the importance of robust legal frameworks in both countries and seeks to enhance local economies, biodiversity, and sustainable resource management through improved cooperation. Notable international examples of environmental cooperation include the Alpine Convention, ICPDR, HELCOM, OSPAR Convention, and the Barcelona Convention. The target areas are Epirus in Greece and Southern Albania, involving local authorities and civil protection agencies to foster cooperation and protection efforts.

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RAPIDLY CHANGING TRENDS, NEW MARKETING ENVIRONMENT AND BUSINESS ETHICS IN THE GLOBALIZING WORLD

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ABSTRACT

The dynamics of this increasingly interconnected global economy are constantly changing. Trends that are renewed every day in the internet age and how companies trying to keep up with these trends consider business ethics and how they can maintain this ethics while marketing. It examines these dynamics, highlighting collaborative strategies they can use to leverage the benefits of marketing while mitigating its downsides. This paper explores the ethical collaborative strategies required to adapt and navigate this dynamic framework and highlights the need for coordinated policies, innovation and sustainable marketing.

KEYWORDS: Trends, marketing, sustainability, business ethics

1. Introduction

Globalisation has started especially since the 1980s under the leadership of international capital. Economic, cultural and social borders between countries have become increasingly transparent. In this way, products, services and information circulated faster. The advancement of technology, the development of communication and transportation have played an important role in globalisation.

Thanks to globalisation, the increase in international trade, the increase in multinational companies, the proliferation of international investors is an indicator of how much the economy has grown. Thanks to the media and the internet, cultural borders have been removed and it has become easier to reach the products and information of other countries in a short time. In the social field, there have been increasing migrations and global cooperation of countries.

This dynamic environment, rapidly changing global environment has brought advantages and disadvantages for businesses. While global markets offer new customers to businesses as an advantage, it has brought intense competition and a rapidly changing marketing world according to the changing expectations of customers. This has made it necessary for businesses to follow not only local trends and traditional marketing techniques but also global trends and modern marketing techniques in order to be successful. It has shown that businesses need to make their strategies in this direction in order to stay in the game in the capitalist order.

Globalisation has also changed in the field of marketing. Global new marketing strategies tell businesses that they should not only be stuck in the traditional market but also open up to global dynamics. In order to compete globally, businesses need to be innovative and flexible, not ignore ethical values, and communicate closely with customers. In this paper, the effects of globalisation on businesses and the management of these effects will be examined by focusing on rapidly changing trends, new marketing environment and business ethics in a globalised world.

2. Digital Marketing

The term "digital marketing" refers to the electronic promotion and marketing of products and services. Thanks to the constant development of technology, digital marketing can be carried out in a multitude of ways. These include search engine optimization, search engine marketing, content marketing, influencer marketing, campaign marketing and social media marketing, content automation, e-commerce marketing, social media optimization, direct marketing via email, display advertising, and so forth. Businesses aim to sell more products and services and make profit by employing the most effective method of reaching their target audience.

3. The effects of technological developments and digitalisation on marketing strategies

Since the Internet, technology and media cause the marketing and sales processes to be reorganised, it is a necessity for companies to change their strategies in order to remain in the competitive environment rather than a choice. Companies that do not fulfil the requirements of change will not

find a place for themselves in the competition within the capitalist system. Since the reactions of consumers can be received instantly with digitalisation, there are advantages in determining strategies in this direction according to their wishes and needs. Campaigns made in the digital environment, its transformation into sales, the low cost of marketing, and being able to see the instant reactions of the consumer are among these advantages. Considering the target audience of the business, continuous self-renewal is one of these strategies to give personality to the business. The point that makes a difference is how businesses introduce themselves to their target audiences with their own products or services.

The advent of technology has not only affected the capacity of products but also the places where they are distributed. The advent of communication, transport and the internet has facilitated the promotion and transportation of products, thereby enabling the emergence of global markets. Further globalisation of marketing through technology has increased the number of products and alternatives available to consumers. Consequently, competition between businesses has also increased. With the increase in the options that consumers can compare, marketing has become even more important for businesses to survive in this competitive environment. Businesses should closely follow the rapidly changing technology and keep up with the changes rapidly. Companies that only continue to use traditional marketing methods (advertising in television, radio, newspapers) need to switch to new marketing techniques in order to survive in the digital age. The data that businesses have is the most important key. Companies that can analyse and use data correctly are ahead in the digital age. Data analysis conducts market research of the product or service and shows what the consumer's purchasing tendencies are. After the analysis, a marketer's job is to create projects to increase awareness, brand loyalty and sales rates in the digital marketing processes targeted by the business.

4. The impact of social media on consumer habits

Social media allows us to instantly access a lot of information and comments about products and services in the market. Consumer comments and experiences form our opinion about that product or service. The fact that social media is a new source of information, and the abundance of information affects the decision process of consumers. The classical EBM model was chosen to analyse the process. The model consists of five stages: need recognition, information search, alternative

evaluation, purchase decision, and post-purchase evaluation. It investigates how much experiences change with social media use according to a survey conducted in 2019. The results show that social media use affects consumer satisfaction at the information search and alternative evaluation stages, with satisfaction increasing as the consumer moves towards the final purchase decision and post-purchase evaluation. (Impact of social media on consumer behaviour, D. Voramontri and L. Klieb, 2019)

5. Ethical and sustainable dimensions in global marketing

Sustainability can be discussed by addressing environmental, economic and social issues in the long term. Consumers are now starting to pay attention to how commercial activities have an impact on the environment and society. Ethical consumption has become an important issue for consumers. Consumers want companies to take responsibility for their behaviour and act accordingly. When we look at this situation for companies, the development of the company's personality in terms of social responsibility will be beneficial to both society and the company in the long term. Increasing environmental and social events in the world should be taken into consideration by companies. We can give examples of how these issues are marketed by companies.

Protecting green areas and recycling is an important issue to make the world more liveable. Large-scale companies and factories need to produce with methods that cause the least damage to the environment without cutting the budget. Since this issue has come to the fore in recent years, we see this issue in the advertisements of some brands. By appealing to the ethical and moral values of the consumer, they market them to shop from their own brands with peace of mind. However, when we do a short internet research, we see that the clothes they call recycling are produced from low quality fabrics, laboured with low wages in low-income countries and environmental waste is not given importance. Directing consumers to shop with trending environmental and social issues will help us understand where companies stand in terms of ethics, social responsibility and sustainability.

From a sociological point of view, consumers shape their purchasing behaviours by taking into consideration the people they look up to or want to be like, the status of the people or a lifestyle that is popular at that time. Consumers feel closer to them and their lifestyles when they consume the same as those people. If those people who are role models are present on social media, consumers can be

more easily influenced as their purchasing preferences are visible. If a brand is aware of this, it can highlight its brand by working with that person. For example, a bank makes an advertisement that directs consumers to take out a loan with a trend that has become popular recently. If this makes the young consumer think that he/she can fit into that trend and get closer to the lifestyle he/she dreams of, it is debatable how sustainable this is. Marketing is to keep up with the pace in a rapidly changing environment. However, it is also important how much of it is used for the benefit of the consumer and society. In order to make more profit and reach more consumers, we can think about the sustainability and morality of the advertisements made to persuade the consumer to spend more.

It was mentioned that in the new marketing environment, consumers are influenced by each other's comments and experiences in the media. This situation can be turned in favour of businesses. Showing the product in a quality that it is not, pricing it, marketing accordingly and buying fake reviews are encountered in this period. Deceiving the consumer again poses an ethical problem.

6. Differences in business ethics between various cultures and countries

According to a study by Lammertjan Dam and Bert Scholtens in 2007: "W*e find for our sample of almost 2,700 firms in 24 countries that the location where the firm is headquartered appears to be a significant factor when it comes to the assessment of the firm's communication, implementation and the systems of the code of ethics (comprehensiveness), its governance of bribery and corruption, and its human rights policies."* (Cultural Values and International Differences in Business Ethics).

Firms in the US, Australia, and Scandinavia outperform the average firm, while firms in Luxembourg, Singapore, and Hong Kong perform relatively poorly. *In many cases, we find that specific cultural values can be significantly associated with ethical policies of firms in the countries under investigation. Especially, individualism and uncertainty avoidance are positively associated with firms' ethics, whereas masculinity and power distance tend to be negatively associated. These observations are in line with those found elsewhere in the literature (see Gnyawali, 1996; McGrath et al., 1992; Sanyal, 2005; Thomas and Mueller, 2000)*

7. Conclusion

In this paper I examined Rapidly Changing Trends, New Marketing Environment, and Business Ethics in the Globalising World. I analysed that businesses need to maintain ethical standards while keeping up with this evolving world. Globalisation has required businesses to remain dynamic in the competitive environment. Continuous innovative strategies must be adopted in this environment to appeal to consumers. While maintaining a global marketing approach, companies must also consider sustainable and ethical production and marketing for the environment and society. With these practices, companies not only have a positive impact on society, but also open the doors to long-term reliable and sincere communication with their customers. Despite research, it would not be entirely accurate to say that there is a link between ethics and culture. To better understand this, up-to-date data is needed, and a comprehensive theoretical perspective should be developed. In conclusion, businesses should maintain ethical standards and be dynamic in a rapidly changing trends and new marketing environment. Thus, they can achieve success in a sustainable market environment and have a positive impact globally.

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EARLY SPARKS: FOSTERING ENTREPRENEURSHIP COMPETENCES IN BALKAN COUNTRIES

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ABSTRACT

The article presents a comparative study of the national strategies targeting the integration of entrepreneurship education in primary and secondary schools of five Balkan countries: Albania, Bulgaria, Greece, North Macedonia, and Romania. The article details the institutional frameworks, curriculum integrations, teacher training programs, and key competences emphasized in each country. It discusses specific activities that are deployed in order to facilitate the development of entrepreneurship competences and mindsets among students with the support of government strategies and policy initiatives. Additionally, the article identifies best practices from other European countries in implementing entrepreneurship education, offering practical recommendations for policymakers and educators. The ultimate goal is to enhance the entrepreneurship competences of students, preparing them to navigate their way through the complexities of the modern world with confidence and resilience. The presented research fills a critical gap in the literature by providing insights into the ways in which entrepreneurship competences are cultivated at different educational levels across these countries. The findings will be valuable for policymakers and educators who aspire to improve entrepreneurship education in similar socio-economic contexts globally.

Keywords: Entrepreneurship education, Primary and Secondary education, Public policies, Balkan countries

JEL: I25, L26

1. Introduction

Entrepreneurship education aims at preparing students for a particular vocation, enterprise, or business by cultivating and improving their entrepreneurial spirit, ambition, motivation, and pioneering and adventurous nature. It also seeks to assist entrepreneurs to find and identify business opportunities by developing the necessary strategic skills and tools (Liu, 2019). However, some people give a different interpretation, arguing that the goal of entrepreneurship education should be to develop students' creativity, opportunity awareness, initiative, and innovation rather than to establish new organizations. They also give a broader definition to entrepreneurship, making it applicable to all spheres of society (Lackéus,2015). As a result, entrepreneurial education not only can benefit economic development and increase employment (Panigrahi & Joshi, 2016), but can also determine whether someone will become an entrepreneur, enhance democratic values, andencourage learners to participate in democratic processes and community development. Also, it emphasizes the importance of ethical and sustainable practices in business, aligning economic activities with broader social and environmental goals, and promotes a wide range of competences such as creativity, problem-solving, leadership, and resource management (Web-1).

The United Nations (2015) recognized that entrepreneurship competences are essential for equipping young individuals to innovate, start businesses, and create job opportunities in the rapidly changing global environment. Recognizing the importance of entrepreneurship competences,

Sarri et al. (2022) argue that entrepreneurship education should focus on cultivating an entrepreneurial mindset from an early age. Hassi (2016) supports this view, noting that students who participate in entrepreneurial initiatives in primary school will benefit more from similar programs in the future than students who do not participate in such programs at all. This gradual development ensures that children not only acquire the necessary foundational skills and understanding to navigate the complexities of the business world, but also cultivate their critical thinking, creativity, and problem-solving competences. By the time they become adults, they possess a robust skill set and a confident entrepreneurial mindset, which are essential for their personal and professional growth, as well as for their contribution to economic development and innovation.This article aims to map and compare the national strategies of five Balkan countries (Albania, Bulgaria, Greece, North Macedonia, Romania) regarding the integration of entrepreneurship in primary and secondary education. Due to their location in Southeast Europe, the selected countries connect the Balkan region with the rest of the world. Bulgaria, Greece, and Romania are already members of the European Union, while Albania and North Macedonia have been granted the candidate status. Moreover, the geographical contiguity and historical interrelations of the Balkan countries foster opportunities for reciprocal influence and collaboration (Weichert et al., 2009). These countries exhibit certain commonalities in their political and historical contexts. They share cultural and heritage elements, while four of them (except for Greece) experienced communist regimes in the past. Their intertwined histories have cultivated analogous social and economic frameworks.

The article constitutes a pioneering study of entrepreneurship education in primary and secondary schools across the five selected countries. The comparative analysis of their interventions aims to designate best practices and to identify common challenges in the implementation of entrepreneurship education. The study highlights effective strategies, such as specific teaching methods and policy initiatives that can be adopted elsewhere. The findings will offer useful information to policymakers and educators in order to incite reforms and curriculum development. This research not only fills a critical gap in the literature, but also offers practical recommendations for the improvement of entrepreneurship education, thus providing insights that are valuable to similar socio-economic contexts globally.

2. Literature review

In 2006, the European Commission and the Norwegian government hosted a conference that produced the Oslo Agenda for Entrepreneurship Education in Europe. This agenda outlined actionable steps for the incorporation of entrepreneurship education at all educational levels (European Commission, 2006). This is important because countries can stimulate economic development, create new businesses, and generate employment opportunities by fostering students' entrepreneurship skills and mindsets (Pacher & Glinik, 2024). Furthermore, the European Parliament and the Council endorsed a recommendation on critical competences for lifelong learning in December 2006, identifying entrepreneurship as essential for social inclusion, active citizenship, personal fulfilment, and employability (European Parliament & Council of the European Union, 2006). According to Morakinyo and Akinsola (2019), entrepreneurship education is extremely effective in improving youth community involvement in the 21st century.

The next significant step in supporting the development of entrepreneurship competences came in 2008 with the European Commission's "Small Business Act for Europe" initiative. This initiative aimed to enhance the EU's overall entrepreneurship policy, highlighting the importance of education and training systems that promote entrepreneurial mindsets and skills from a young age (European Commission, 2008), because early efforts in developing skills can prove to be especially impactful over the long term (Huber et al., 2014). In 2013, the Entrepreneurship 2020 Action Plan marked a significant advancement in recognizing entrepreneurship competences. This plan focused on providing entrepreneurship education and training to foster business creation and growth, removing administrative obstacles, and assisting entrepreneurs during critical stages of their businesses. Additionally, it aimed to rekindle the entrepreneurial culture in Europe by fostering the next generation of entrepreneurs. These recommendations were driven by the need to create more entrepreneurs who can stimulate growth and increase employment. Since 2008, Europe has faced its worst economic downturn in 50 years, with more than 25 million unemployed and most SMEs not being able to recover yet (European Parliament, 2013).

Introduced in 2016, the European Entrepreneurship Competence Framework (EntreComp) defines entrepreneurship competency that comprises 15 competences allocated in three areas: ideas and opportunities, resources, and taking action.

EntreComp aims to create a common understanding of entrepreneurship and serves as a tool for individuals, educators, trainers, employers, and policymakers. Fostering entrepreneurial capabilities is a major EU policy goal, leading to the creation of this framework (Bacigalupo et al., 2016). In 2018, the European Commission promoted a strategic policy framework for entrepreneurship education, providing member states guidance for incorporating it into national programs (Council of the European Union, 2018). This was crucial as professionals faced obstacles like lack of resources, fear of commercialism, systemic barriers, assessment challenges, and conceptual ambiguity (Lackéus, 2015). In 2020, the European Skills Agenda emphasized reskilling and upskilling with entrepreneurial competences, highlighting lifelong learning and the role of these skills in the digital and green transitions, driven by changes like telework during the COVID-19 pandemic (European Commission, 2020).

Several studies have investigated entrepreneurship in education. Each one focuses on different aspects, uncovering various key findings, and identifying impacts on entrepreneurial competences (Table 1). For example, Pasic et al. (2022) explored service-related competences in the tourism sector, emphasizing the enhancement of sector-specific entrepreneurial skills at the tertiary education level. Vučijak (2018) examined practices in entrepreneurship education among engineering graduates in South East Europe and Russia, demonstrating improvements in entrepreneurial skills through the REBUS project. Marinkovic (2015) focused on the development of an entrepreneurial culture in the Western Balkans by establishing creative frameworks in primary and secondary educational institutions that promote a broader entrepreneurial culture. Ćoćkalo et al. (2017) identified trends and factors affecting youth entrepreneurship in tertiary education, addressing challenges and creating opportunities for young entrepreneurs. Radović-Marković (2019) analyzed the role of globalization in fostering entrepreneurship in small countries, highlighting the enhancement of entrepreneurship competences through global exposure. Peković et al. (2017) discussed the support from initiatives like the REBUS project in boosting entrepreneurship competences in innovative sectors in Montenegro. Bogdanović et al. (2022) emphasized the importance of financial literacy and entrepreneurship education in Serbia and Northern Macedonia, enhancing skills in risk assessment, business planning, and financial management across primary, secondary, and tertiary education levels. Finally, Vutsova et al. (2022) investigated

youth entrepreneurship in the Western Balkans as a response to youth unemployment, noting that entrepreneurship can reduce unemployment and create job opportunities despite challenges such as lack of experience and difficult transitions between education and the labor market. However, none of these studies has conducted a comparative analysis of the development of entrepreneurship competences in primary and secondary education within the formal education systems of Greece, Bulgaria, Romania, Albania, and North Macedonia. This gap in the literature suggests a need for research that explores how entrepreneurship skills are cultivated in the education systems of these countries.

3. Results and discussion

Each country promotes entrepreneurship education in primary and secondary schools through various frameworks and strategies, curriculum integration, teacher training, government support, key competences, and extracurricular activities (Table 2). Albania has adopted the European Entrepreneurship Competence Framework (EntreComp) and implemented the National Employment and Skills Strategy 2019-2022, along with Law No. 25/2022, which promotes start-up development (Lula, 2023). Bulgaria focuses on the National SME Strategy 2021-2027, Youth Act, National Education Strategy and the National Youth Strategy 2021-30 to strengthen entrepreneurship education (OECD,2023). Greece has integrated Skills Labs into its mandatory curriculum, covering 21stcentury skills, life skills, digital citizenship, and entrepreneurship skills (Law 4807/2021, Article 52). North Macedonia implements the Entrepreneurial Learning Strategy 2014-2020, which is supported by the Agency for Promotion of Entrepreneurship and the Fund for Innovation and Technologies (Polenakovik & Sutevski, 2014). Romania's entrepreneurship education is a key component of the professional education system, guided by government policies to develop social, civic, and entrepreneurship competences (Web-2).

Curriculum integration also varies across these countries. In Albania, the high school curriculum emphasizes practical and project-based learning, integrating entrepreneurship education into six subjects (Instituti i Zhvillimit të Arsimit, 2015). In Bulgaria, an ordinance established 20 general education subjects for primary school. One of them fosters "Technologies and Entrepreneurship" and is offered to students of all grades. Instruction begins in the first grade and comes to a conclusion in the twelfth grade, adapting the courses to the students'

educational level at each stage. The specialized courses of the program include mandatory entrepreneurship classes focusing either on Entrepreneurship and Information Technologies or on Entrepreneurship and Geography and Economics (Web-3). Greece combines cognitive curriculum perspectives with skill development through Skills Labs, including activities such as project-based learning, planning and presenting projects, creating games, participating in theatrical plays, and virtual business simulations (Law 4807/2021, Article 52). In North Macedonia, entrepreneurship is integrated into six primary education subjects and is further highlighted in the 9[th]grade subject "Innovations." Secondary education includes compulsory subjects like "Business and Entrepreneurship" (Министерство за образование и наука, 2015b). Romania's 11[th]grade curriculum focuses on practical skills and real-life applications, covering social education, economic and financial education, Romanian language and literature, and career counseling (Ministerul Educației, 2023).

Teacher training programs also vary. In Albania, teacher training helps educators convey principles of entrepreneurship, innovative thinking, risk-taking, and business planning (Ministria e Arsimit dhe Sportit, 2020). Bulgaria supports teachers through training courses offered by the Bulgarian Centre of Training Firms (European Commission, 2014). Greece's Institute of Educational Policy provides resources and lesson plans to assist teachers. North Macedonia's government supports teacher training through the Agency for Promotion of Entrepreneurship (European Commission, 2024). In Romania, teacher training programs focus on adapting methodologies to diverse needs and promoting the use of digital resources and innovative strategies (Ministerul Educației, 2023). Government support is significant in these countries, with Albania's Law No. 25/2022 and the National Employment and Skills Strategy 2019-2022 (Lula, 2023), Bulgaria's National SME Strategy 2021-27,Youth Act, National Education Strategy and the National Youth Strategy 2021-30 (OECD, 2023), Greece's Skills Labs supported by the Ministry of Education, (Law 4807/2021, Article 52) and North Macedonia's initiatives by the Agency for Promotion of Entrepreneurship (Polenakovik & Sutevski, 2014). Romania emphasizes the development of social, civic, and entrepreneurship competences in professional education through government guidelines (Web-2).

The extracurricular activities in these five countries focus on different ways to promote entrepreneurship education. In Albania, the emphasis is placed on practical and project-based learning, which is integrated in the high school curriculum and offers students a hands-on experience in entrepreneurship (Instituti i Zhvillimit të Arsimit, 2015). Bulgaria extends its support through extracurricular programs that offer training, access to business incubators, and start-up funding, thus helping students turn their ideas into real ventures (OECD, 2023). In Greece, the approach involves interactive activities such as project-based learning, creation of games, theatrical plays, and virtual business simulations, which encourage the development of 21st-century skills and entrepreneurial thinking (Law 4807/2021, Article 52). In North Macedonia, there are extracurricular activities in entrepreneurship, such as competitions, fairs, and events like garage sales (Penaluna et al., 2020). Romania incorporates a mix of project work, risk assessment, and personal and professional development activities, targeting the development of entrepreneurial, social, and civic competences (Web-2). Each country uses distinct methods to foster an entrepreneurial mindset and practical business skills among students.

Best practices from other countries can serve as valuable examples for teachers and contribute to the improvement of entrepreneurship education. Estonia's Chamber of Commerce and Industry established a round table, uniting government bodies, schools, NGOs, universities, and industries in order to collaborate for the development of entrepreneurship education. Similarly, Spain's EJE/EME projects promote entrepreneurship in primary and secondary education with a focus on skills development through practical, hands-on experiences. The EJE project for secondary students (15-18) develops initiative, decision-making, creativity, and teamwork and teaches business creation and management. It also connects students with local entities, fostering a deeper understanding of European citizenship. These examples underscore the importance of practical experience, stakeholder collaboration, and real-world business engagement, demonstrating that a strategic, hands-on approach enhances students' preparedness for future challenges (YES, 2012).

In addition, a multifaceted approach of teachers' training is necessary for the enhancement of entrepreneurship education. Workshops and webinars allow for sharing best practices and engaging in interactive sessions like case studies. Online platforms with courses and forums, along with e-learning modules and mobile apps, offer flexible learning and networking opportunities. Mentorship programs provide continuous support, while collaborative projects facilitate international cooperation. Comprehensive curriculum guides and

multilingual resources ensure accessibility. The establishment of professional networks and online communities fosters a sense of community, with platforms like LinkedIn and Facebook facilitating resource sharing. Continuous feedback and research investment ensure the effectiveness of these programs, helping teachers promote innovation and entrepreneurship in student communities worldwide.

4. Conclusion

The European Union implemented several key strategies to enhance entrepreneurship education. Initiatives such as the Oslo Agenda for Entrepreneurship Education in Europe, the "Small Business Act for Europe"(European Commission, 2006) and the Entrepreneurship 2020 Action Plan emphasize the importance of developing entrepreneurship skills at all educational levels to stimulate economic growth, create new businesses, and generate employment opportunities (European Parliament, 2013). The European Entrepreneurship Competence Framework (EntreComp) was introduced to define and promote entrepreneurship competences (Bacigalupo et al., 2016). In the Balkans, countries like Albania, Bulgaria, Greece, North Macedonia, and Romania adopted various strategies to integrate entrepreneurship education into their curricula, with the support of government policies and teacher training programs. These efforts aim to develop key competences and practical skills, ensuring that students are equipped to thrive in their future careers. Studies have shown that such education content significantly improves youth community involvement (Akintolu & Akinsola, 2019) and entrepreneurship skills (Din et al., 2016), thus addressing challenges like youth unemployment and fostering entrepreneurial culture (Martín-Gutiérrez et al., 2024).

Entrepreneurship education in the Balkan region constitutes a pivotal asset in addressing several critical economic and societal challenges. The limited start-up activity in the particular area compared to other parts of the world (StartupBlink, 2024) and the continuous struggle of employers to find people with the appropriate soft skills like communication and teamwork (ManpowerGroup, 2024), underscore the urgent need for comprehensive entrepreneurship training that can develop students' soft skills (Humsona&Yuliani,2018).

As a result, entrepreneurship education not only equips young individuals with the necessary skills for innovation and business creation, but also fosters a mindset conducive to active and informed citizenship. This is crucial in regions like the Balkans where economic revitalization often depends on the emergence of new businesses and the entrepreneurial spirit of their people.

Moreover, the integration of entrepreneurship education in interdisciplinary teacher training programs is particularly significant. By fostering an entrepreneurial mindset among educators, we lay the groundwork for a more profound and widespread acknowledgement and understanding of the importance of entrepreneurship education. Teachers equipped with an entrepreneurial mindset are better prepared to develop these competences in their students, thereby amplifying the impact of educational initiatives aimed at fostering entrepreneurship. Educators can progressively build their understanding and appreciation of entrepreneurial principles through targeted teacher training initiatives. This, in turn, enables them to impart these values and skills to their students more effectively. Such a cyclical enhancement of capabilities enriches both the individual and societal fabric, thus leading to a more resilient and innovative economic landscape.

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Paper Title	Author(s)	Education Level	Focus	Key Findings	Impact of Entrepreneurial Competences
Service Related Competences Education Practices in South East Europe	Pastc et al., 2022	Tertiary	Tourism sector	Emphasis on tourism-related competences	Enhances sector-specific entrepreneurial skills
Practices in Entrepreneurship Education in South East Europe and Russia	Vučijak, 2018	Tertiary	Engineering graduates	Promotion of entrepreneurship competences through REBUS project	Enhances entrepreneurial skills among engineering students
Fostering an Entrepreneurial Culture in Western Balkans	Marinkovic, 2015	Primary and Secondary	Educational frameworks	Establishment of creative frameworks in schools/universities	Promotes a broader entrepreneurial culture
Analysis of Possibilities for Improving Entrepreneurial Behavior of Young People	Ćoćkalo et al., 2017	Tertiary	Youth entrepreneurship	Identifies trends and factors affecting young entrepreneurs	Addresses challenges and opportunities for youth entrepreneurship
The Impact of Globalization on Entrepreneurship in Small Countries	Radović-Marković, 2019	Tertiary	Globalization effects	Role of globalization in fostering entrepreneurship	Enhances entrepreneurial competences through global exposure
The State of Entrepreneurship and Innovativeness in Montenegro	Peković et al., 2017	Tertiary	Innovativeness	Support from initiatives like REBUS project	Boosts entrepreneurial competences in innovative sectors
Financial Literacy and Entrepreneurial Education as a Prerequisite for the Development of Entrepreneurship in the Republic of Serbia and Northern Macedonia	Bogdanović et al., 2022	Primary, Secondary, Tertiary	Financial literacy and Entrepreneurial Education	Importance of financial literacy for managing resources, need for comprehensive entrepreneurial education, challenges in practical training integration	Enhances skills in risk assessment, business planning, and financial management, fosters an entrepreneurial mindset
The Youth Entrepreneurship as Response to the Youth Unemployment - Examples of Western Balkan Region	Vutsovaet al., 2022	Not specified	Youth entrepreneurship	Young entrepreneurs face challenges such as lack of experience and practice, and difficult transition between education and the labor market	Entrepreneurship is seen as a tool for reducing youth unemployment, supported by national and international initiatives, creating a new milieu for steady eco-innovation systems and job opportunities.

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THE IMPACT OF THE UNITED STATES FINANCIAL CRISES ON EUROPE: MITIGATION STRATEGIES

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ABSTRACT

The world has experienced several significant financial and economic crises throughout history, each with unique causes, consequences, and responses. The financial crises originating in the United States have profoundly impacted Europe, necessitating a range of mitigation strategies to stabilize the affected economies. This article examines the ripple effects of U.S. financial turbulence on European markets, focusing on key episodes such as the 2008 financial crisis and subsequent eurozone debt crisis. The interconnectedness of global financial systems led to significant economic disruptions in Europe, including banking sector instability, decreased investor confidence, and economic recessions. In response, European policymakers implemented various strategies to mitigate these impacts, including coordinated monetary policies, stringent financial regulations, and the establishment of financial stability mechanisms like the European Financial Stability Facility (EFSF). This comprehensive analysis highlights the importance of robust financial frameworks and proactive policy measures in safeguarding against future crises and underscores the critical need for international cooperation in managing global financial stability.

1. Introduction

The financial crises originating from the United States have had far-reaching impacts on global economies, with Europe being significantly affected. The 2008 financial crisis, which began with the collapse of Lehman Brothers, quickly spread across the Atlantic, exposing vulnerabilities in the European financial system. This crisis led to severe economic downturns, bank failures, and a subsequent sovereign debt crisis within the eurozone. The interconnectedness of global financial markets meant that shocks in the U.S. financial sector rapidly transmitted to Europe, highlighting the fragility and interdependence of international economic systems. The immediate effects in Europe included a sharp decline in economic activity, skyrocketing unemployment rates, and widespread fiscal deficits. European banks, heavily exposed to U.S. mortgage-backed securities, faced massive losses, leading to a credit crunch that stifled economic growth. Governments across Europe were forced to implement emergency measures to stabilize their economies and restore confidence in the financial system. These measures included bank bailouts, fiscal stimulus packages, and unprecedented monetary policy interventions by the European Central Bank (ECB) (IMF) (IntechOpen - Open Science Open Minds) (Cambridge). In the aftermath, Europe undertook significant regulatory reforms to enhance financial stability and prevent future crises. The establishment of the European Financial Stability Facility (EFSF) and later the European Stability Mechanism (ESM) were critical steps in providing financial assistance to member states in distress. Moreover, the introduction of more stringent banking regulations, such as the Basel III framework, aimed to strengthen the resilience of the financial sector by increasing capital requirements and improving risk management practices (IntechOpen - Open Science Open Minds) (Cambridge). This article delves into the complex impacts of U.S. financial crises on Europe and explores the mitigation strategies that have been implemented to address these challenges. By examining historical crises and their repercussions, we can gain valuable insights into the effectiveness of these strategies and the importance of coordinated international efforts in maintaining global financial stability.

The 2008 Financial Crisis and the Eurozone Crisis. The global financial crisis that erupted in 2008 in the United States had significant spillover effects on Europe. The interconnectedness of the global financial system played a key role in transmitting the crisis from the US to Europe [5]. European banks were heavily involved in subprime mortgage securitization in the US and took heavy losses, which fundamentally transmitted the crisis to the EU [5].

The crisis in the US led to a severe recession in Europe, with the economy contracting for five consecutive quarters [1]. Interbank lending dried up, banks deleveraged, and credit standards tightened, halting economic lending [1]. This crisis in the financial sector then triggered the European sovereign debt crisis, as governments had to bail out struggling banks, leading to a sharp deterioration in public finances [1][2].

The European sovereign debt crisis, often referred to as the Eurozone crisis, erupted in the wake of the Great Recession around late 2009 [1]. It was characterized by an environment of overly high government structural deficits and accelerating debt levels across several Eurozone member states [1]. The main root causes were a mix of weak economic growth, competitiveness issues, bank failures, and large pre-existing debt levels [1].

Impact on Europe. The crisis had unequal impacts across European countries, with the recovery taking different paths [1]. Some countries like Greece, Portugal, Ireland, Spain and Italy faced severe sovereign debt crises that required bailouts and austerity measures [1][4].

Figure 2 – Government debt 2006-2017
Data source: Eurostat, 2018.
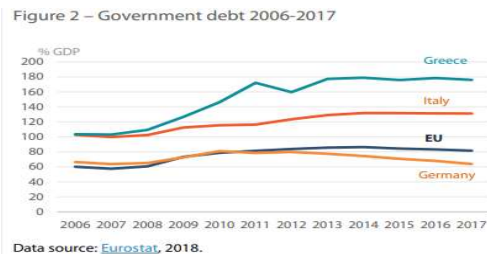
The crisis contributed to rising unemployment, male, younger and lower skilled workers hit particularly hard [3]. It also increased European citizens' skepticism toward immigration, especially in the most economically affected countries [1].

Overall, the US financial crises had severe negative impacts on the European economy, leading to recessions, debt crises, unemployment and social tensions across the continent [1][2][3][4][5].

Figure 1 – EU GDP and unemployment (2005-2017)
Data source: Eurostat, 2018.
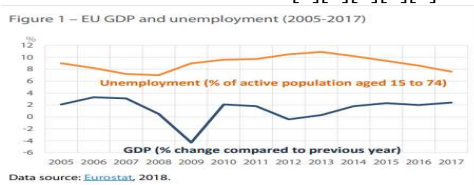
2. Policy Mistakes and Mitigation Strategies

Despite the severity of the crisis, the EU and ECB took significant measures to prevent an even greater collapse of the Eurozone [2][3]. This included bailouts to save banks and help stressed sovereigns, as well as reforms to strengthen economic governance and financial sector stability [2].

However, the policy response has been criticized as ineffective and misguided in several ways [3]:

- The crisis was misframed as one of public debt rather than private debt, leading to a focus on austerity and structural reforms instead of growth-oriented policies [3].
- The chosen remedies of budgetary austerity and structural reforms failed to adequately address the underlying causes and had excessive socioeconomic costs in terms of unemployment, inequality and poverty [3].
- The "one size fits all" approach to structural reforms did not account for differences in national economic models and growth strategies across Eurozone members [3].
- The pace of reforms slowed considerably after 2013 when the economic situation began to improve, leaving many challenges unresolved [1].

3. Mitigation strategies

Monetary Policy Adjustments played a crucial role in mitigating the impact of the U.S. financial crises on Europe. The European Central Bank (ECB) implemented aggressive monetary easing measures, including significant reductions in interest rates and the initiation of quantitative easing programs to ensure liquidity and support credit flow within the European economy. By lowering interest rates, the ECB aimed to reduce the cost of borrowing, thereby encouraging investment and consumption to stimulate economic activity. The quantitative easing program involved the large-scale purchase of government and private sector securities, which helped stabilize financial markets and provided much-needed liquidity to the banking sector. These actions were essential in maintaining financial stability and preventing a more severe economic downturn in the eurozone(Council on Foreign Relations) (CEPR) (Econofact).

Table 1 Key European Central Bank(ECB) interest rates during the Eurozone crisis

Date	Main Refinancing Operations Rate	Deposit Facility Rate	Marginal Lending Facilityte
2008 July	4.25%		
2008 October	3.75%	2.75%	4.25%
2008 December	2.50%	2.00%	3.00%
2009 March	1.50%	0.75%	2.50%
2009 May	1.00%	0.25%	1.75%
2011 April	1.25%		2.00%
2011 July	1.50%		2.25%
2011 November	1.25%		2.00%
2011 December	1.00%		1.75%
2012 July	0.75%	0.00% (reduction to zero for the first time)	1.50%
2013 May	0.50%		1.00%
2013 November	0.25%		0.75%
2014 June	0.15%	-0.10% (first time introduced negative rate)	0.40%
2014 September	0.05%	-0.20%	0.30%

These rates reflect the ECB's efforts to stimulate the economy by lowering borrowing costs during the crisis.

Fiscal Stimulus emerged as a pivotal strategy to counteract the economic fallout from the U.S. financial crises in Europe. In response to the severe economic contraction, various European governments implemented expansive fiscal policies to stimulate demand and stabilize their economies. These stimulus packages included tax cuts, increased public spending, and direct support for distressed industries and households. For instance, Germany's stimulus measures, amounting to over €80 billion, focused on infrastructure investments and incentives for renewable energy projects, effectively boosting economic activity and employment. Similarly, the United Kingdom's fiscal response included a temporary reduction in the value-added tax (VAT) and substantial public investment in housing and infrastructure, which helped to shore up demand and mitigate the recession's impact (Brookings) (CEPR). These coordinated fiscal efforts across Europe not only provided immediate relief but also set the stage for long-term economic resilience by addressing structural weaknesses and fostering innovation (CEPR)(Econofact).

Banking Sector Reforms were pivotal in the European Union's strategy to mitigate the impact of the financial crises and enhance the stability of the banking system. Central to these reforms was the establishment of the Single Supervisory Mechanism (SSM) in 2014, which centralized the supervision of the most significant eurozone banks under the European Central Bank (ECB). This measure aimed to ensure uniform regulatory standards and robust oversight across member states, thereby preventing regulatory arbitrage and improving financial stability (Brookings) (CEPR)

Another critical component was the Single Resolution Mechanism (SRM), designed to manage the orderly resolution of failing banks with minimal impact on the real economy and public finances. The SRM included the Single Resolution Fund (SRF), financed by contributions from the banking sector, which provided a safety net to cover the costs associated with bank resolutions without resorting to taxpayer money (CEPR) (European Central Bank). Additionally, the Capital Requirements Directive IV (CRD IV) and the Capital Requirements Regulation (CRR) introduced stricter capital and liquidity requirements. These regulations were aimed at enhancing banks' resilience to financial shocks by ensuring they maintained adequate capital buffers and managed liquidity risks more effectively. (European Central Bank)

These reforms were supported by the European Banking Authority (EBA), which played a crucial role in harmonizing regulatory practices and conducting regular stress tests to assess the resilience of banks. The comprehensive framework of these banking sector reforms not only aimed to prevent future crises but also sought to restore confidence in the European banking system, ensuring that it could better support economic growth and stability in the long term (European Central Bank), (European Central Bank)

Structural Reforms were essential to the European Union's strategy for addressing the economic weaknesses revealed by the financial crises and fostering long-term growth and stability. A key area of focus was labour market reform, aimed at increasing employment flexibility and reducing unemployment. Countries such as Spain and Portugal implemented significant changes to labor laws, making it easier for businesses to hire and fire employees, thereby enhancing job creation and reducing high levels of youth unemployment.

Reforms in product markets sought to enhance competition and efficiency. For example, Italy introduced measures to liberalize professions and reduce regulatory burdens on businesses, which improved market dynamics and encouraged innovation . These reforms were complemented by efforts to streamline the public sector. Greece, under its international bailout agreements, embarked on extensive public administration reforms, which included reducing the size of the public sector, improving tax collection, and enhancing transparency in government operations.

Additionally, pension reforms were critical in ensuring the sustainability of public finances. Countries like France and Poland extended the retirement age and adjusted pension benefits to reflect demographic changes, thereby reducing long-term fiscal pressures. These structural reforms were pivotal not only in addressing immediate economic challenges but also in laying a foundation for sustainable and inclusive growth across the Eurozone, ensuring that economies were better prepared to withstand future shocks.

4. Conclusion

The financial crises originating from the United States, particularly the 2008 financial crisis and the subsequent eurozone debt crisis, had profound impacts on Europe. The interconnectedness of global financial systems meant that shocks in the U.S. financial sector quickly transmitted to Europe, leading to significant economic disruptions.

European policymakers responded with a range of mitigation strategies, including aggressive monetary policy adjustments, expansive fiscal stimulus measures, comprehensive banking sector reforms, and essential structural reforms. These strategies were crucial in stabilizing the affected economies and restoring confidence in the financial

system.
Europe has undertaken important regulatory reforms to enhance financial stability and prevent future crises. The establishment of the European Financial Stability Facility (EFSF) and later the European Stability Mechanism (ESM), were critical steps in providing financial assistance to struggling member states. However, Europe should not stop with these arrangements, but take into account the mitigation and prevention policy strategies proposed in the paper and implement them to prevent crises from recurring.

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Monetary Policy Adjustments, European Central Bank interest rates, Euro foreign exchange reference rates, Euro area yield curves, Decisions, statements & accounts, International Monetary Fund (IMF) IMF Data, Organization for Economic Cooperation and Development (OECD)About the OECD, European Commission, World Bank

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EXAMINATION OF KEY FACTORS INFLUENCING ECONOMIC GROWTH

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Abstract:

Research examines the key internal and external factors that drive economic growth, focusing on how they interact to support or hinder stable development, especially in small open economies. It emphasizes the importance of distinguishing between factors within a country's control, like fiscal policy and human capital, and external factors, such as global demand, foreign direct investment and etc.

Through a regional analysis, the study shows that economic growth varies globally, with South Asia and East Asia experiencing stronger growth due to factors like a youthful population and trade. In contrast, regions like Latin America and Sub-Saharan Africa face challenges like social instability and economic weaknesses.

The research concludes that stable growth depends on the harmonious interplay of internal and external factors. For developing countries with small open economies, such as Armenia, managing external vulnerabilities alongside strong domestic policies is crucial for achieving long-term stability.

Keywords: economic growth, internal factors, external factors, stable development

Economic growth is a vital indicator of a nation's prosperity and well-being, reflecting the capacity of an economy to produce goods and services over time. Understanding the key factors that drive economic growth is crucial for policymakers, economists, and scholars alike, as it provides insights into how to foster sustainable development and improve the standard of living.

Global economic growth directly affects the standard of living and quality of life of people living in all countries of the world, which is one of the main goals of any country's economic policy. As economies expand, new opportunities are created through increased incomes and job creation, which in turn reduces poverty and creates strong foundations for further sustainable development in countries. Figure 1 shows the world average of real GDP growth rates, as well as for upper-middle-income countries and groups of high-income countries. As it becomes clear from the graph, the highest rate of growth is shared by countries with upper middle income, and in high-income countries, growth is more moderate. It is clear from the chart that the global growth rate has had 2 major declines, the first due to the global financial and economic crisis and the second due to the COVID-19 pandemic, during which the restrictions imposed by the governments of the countries hit the economies hard.
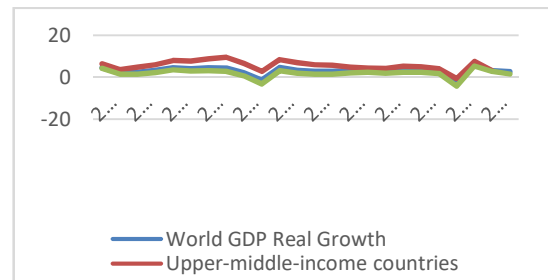

Figure 1. Global economic growth rate

It is normal that the economic growth cannot be distributed evenly among the entities of the world economy, therefore different entities that are part of the economy received different portions of growth
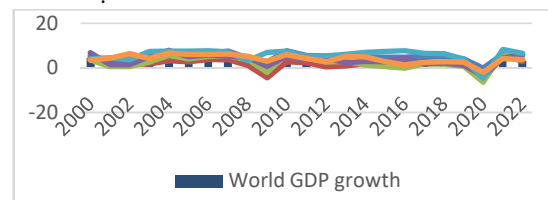
Figure 2. The regional economic growth rates classified by the World Bank.

The highest average growth rate is provided by the South Asian region, where the average growth rate during the period under review was 5.6%, which is about 2.8 percentage points higher than the global average. Being the most populous country in South Asia as well as the main driver of regional economic growth, India's rapid economic growth is driven by a large proportion of its young population. India has the largest youth population in the world and about 66 percent of the total population (over 808 million) is under the age of 35.

The East Asia and Pacific region is known as a cluster of countries at different levels of development, ranging from high-income countries to middle- and low-income countries. The average growth rate over the past 23 years has been 4.8%, the second highest average growth after South Asia. The COVID-19 pandemic as well as the war situation in Ukraine also affected the growth dynamics in this region, but less than in other regions. In particular, the real GDP decline in 2020 was -0.2%, which is comparatively mild if compared to the rest of the regions. It is mainly due to the 2.2% economic growth recorded in China in 2020.

Sub-Saharan Africa had fairly stable growth rates between 4.2% and 6.2% from the 2000s until the financial and economic crisis. However, we notice that the regional average hides the existing difference between the countries of the region and both in the preceding periods and in the period under consideration, resource-rich countries recorded serious progress, while the growth in economically and politically unstable countries was again negative. However, with such growth rates, the region continued to lag behind in most development indicators. During the observed period, the average annual growth rate of the region was 3.5%. According to 2022 data, the major regional economic centers are Saudi Arabia with a gross output of US$1.1 trillion, followed by Israel and the United Arab Emirates with a gross output of US$522 billion and US$507 billion, respectively. The region is notable for its large oil and gas reserves. In particular, around 53% of the world's oil reserves and more than 50% of natural gas reserves are located in this region, which was the basis for the fact that these two resources together make up more than half of the region's export share. Although the huge reserves of oil and gas have a great positive effect on the economic performance of countries, there are also risks of dependence on the latter and any fluctuation in their prices affects the economic performance.

Latin America and the Caribbean, being a group of countries full of great opportunities for progress, differ in the structure of their economy, and if, for example, the economy of Venezuela is mainly based on exporting oil, then Chile is known for its copper mining, and there are also countries whose economies are more oriented to agriculture. The region also has serious social problems, in particular, a high level of poverty, increasing unemployment, which naturally have an impact on the further development of the region. The growth rate of the region has a rather fluctuating behavior and an average annual real GDP growth of 2.4% was recorded for the considered period. According to 2022 In terms of GDP, the countries with the largest economy in the region are Brazil with its gross domestic product of 1.9 trillion dollars, followed by Mexico with 1.4 trillion US dollars and the third largest economy is Argentina with a gross product of 632 billion US dollars.

The economic situation in the region of Europe and Central Asia is diverse. Some of the countries, such as Poland, Hungary, the Czech Republic and a number of other countries, experienced significant economic transformations after the fall of communism and, while maintaining stable economic growth rates, differ in their levels of economic development. A segment of countries are still lagging behind in their commitment to major economic transformations, resulting in demographic, effective governance challenges that continue to pose serious obstacles to their sustainable development. The average real GDP growth rate of the region during the considered period is the lowest at 1.8%, and the decline due to the epidemic situation is the 2nd highest after the group of countries of Latin America and the Caribbean - 5.6%. The real GDP growth rate has almost always been below the world average, except in some years. Until 2008 The global financial and economic crisis had the most advanced growth rates in Azerbaijan, with an average annual growth rate of around 16.6%, followed by Armenia with a double-digit average growth rate of 11.1%, followed by Kazakhstan and Tajikistan. As a result of the financial and economic crisis, not only was growth negative in most countries, but there were also countries where the rate of decline reached up to -15.1%.

In economic literature, there is classification of factors affecting economic growth based on various criteria such as direct and indirect, intensive and extensive, supply and demand, controllable and

uncontrollable, economic and non-economic, as well as external and internal factors influencing economic growth. The diversity in the classification of factors can be attributed to differences in researchers& views on the problems of economic growth. In this particular work, the grouping of factors was done based on the source of growth, which has been classified into two broad groups: external factors and internal factors. Here we consider it important to mention the fact that despite such a division of factors, they are interconnected.

Internal factors refer to those elements within a country's economy that directly influence its growth and these are typically under the control of national policymakers. External factors are those that originate outside a country's borders and can affect its economic growth. These factors are often beyond the direct control of national policymakers but can be managed through strategic engagement. Separating internal and external factors is justified for several reasons:

- **Policy Design**: Different strategies are needed to address internal versus external factors. For example, improving education and infrastructure requires domestic policy changes, while enhancing trade relationships involves negotiating with other countries.
- **Control and Influence**: Internal factors are largely within the control of national governments, allowing for direct intervention. External factors, however, are often beyond the direct control of a single nation, requiring international cooperation and strategic positioning in the global economy.
- **Understanding Dependencies**: Distinguishing between internal and external factors helps in understanding the dependencies of an economy. A country heavily reliant on external trade might be more vulnerable to global market fluctuations, while one focusing on internal innovation might have more stable, sustainable growth.
- **Risk Management**: By identifying external factors, countries can better manage risks associated with global economic volatility. Similarly, focusing on internal factors allows for the development of resilience strategies that can help mitigate the impact of external shocks.

In summary, separating internal and external factors affecting economic growth is important for understanding the different dynamics that drive an economy. This distinction helps in crafting effective policies, managing risks, and ensuring that a country can sustain and enhance its economic growth in both domestic and global contexts.

The connection between external and internal factors, as described above, can be illustrated by the example of foreign direct investment (FDI), which is identified as one of the most studied external factors. Most economists and researchers believe that foreign direct investment (FDI) stimulates technology development through investment in the sector, increases capital accumulation, and raises employment levels. However, the impact of foreign direct investment (FDI) depends on the readiness of the economy and economic agents to utilize these investments in a manner that leads to long-term economic results [1]. Thus, we can conclude that internal factors are mostly fundamental in determining the impact of external factors. Therefore, it is the combined result of the two groups of factors that can lead to favorable conditions in ensuring stable economic growth. Studies in the literature also support this claim.

Based on a number of studies in the literature, external demand shocks, supply shocks, and monetary policy shocks can be considered as the main external shocks in countries with a small open economy, including Armenia. The latter are transmission channels for the influence on various indicators, which can be presented in the form of a diagram as follows. The external demand shock can manifest as an increase or decrease in demand. In one scenario, it can lead to greater exports, stimulating production and economic growth in a small open economy. In the opposite scenario, it can result in a reduction in exports, leading to a decrease in production and a slowdown or decrease in potential economic growth. External supply and external monetary policy shocks have their positive and negative effects in a similar way. These shocks, acting through various indicators, can either contribute to the stabilization of economic growth or result in negative consequences for the trajectory of economic development. And the following indicators were considered as the main transmission channels of the above shocks: money transfers, foreign direct investments, foreign trade (export or import), exchange rate.
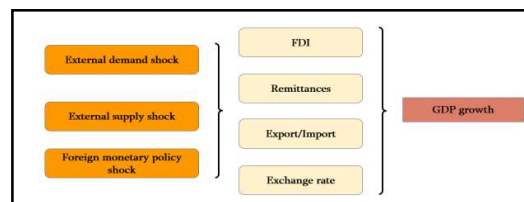
Figure 3. External factors and possible transmission channels.

Summarizing the analyzes of the external factors affecting economic growth found in the literature, we can state that the observation of the mentioned factors is especially important for countries of our type, which have a small open economy, and the latter are certainly an important source of stable economic growth. In particular, we can conclude that the influence of external factors on economic growth can vary based on the specifics of the country, and their impact may differ in terms of both magnitude and direction (positive or negative). Therefore, the importance of the considered external factors is unequivocal, but the extent of the impact and even whether it is positive or negative is determined by many other circumstances and factors, as well as other characteristics of a specific country.

In the study of internal factors, the development policy focused on short-term growth has, according to some authors, resulted in a greater emphasis on external factors and less attention to internal factors. We consider internal factors to be those practically located within the borders of the country, which are the target of policy actions conducted by the country. The study of the literature allowed us to understand that such factors are mainly included in the areas related to demography, fiscal policy, institutional quality, etc. Among many other variables that can be cited as internal determinants of economic growth, inflation also plays an important role in this context. Inflation is a crucial element within the overall system of economic interdependencies. Furthermore, it emphasizes that achieving high and sustainable economic growth in the context of low inflation remains relevant for macroeconomic policymakers in developing countries. Many economists have worked on this topic; however, a unanimous opinion on the issue has never been formed. Some studies have estimated a negative relationship between inflation and economic growth, as indicated by the works of Barro (1991), Fisher (1983, 1993), Bruno and Easterly (1998), and Farira and Carneiro (2002). However, some studies have demonstrated the opposite, as seen in the works of Tobin (1965) and Lucas (1973), where they concluded that there is a positive relationship between economic growth and inflation. According to the results of Nobel laureate Akerlof's research, there is an indication that significant pressure on the inflation level can likely constrain the rate of economic growth, especially during structural changes in the economy. In one study by

Berentaeva, where the necessary conditions for achieving stable economic growth were justified, the author concluded that even if the same level of current inflation is recorded in different countries at the same moment, the rates of economic growth will still vary. This variation depends on the significance of the threshold level of inflation and vice versa.

One of the most important problems in the field of stable economic development in developing countries with a small open economy is also to identify the connection between the concepts of poverty and economic growth, as well as employment and economic growth. Although economists held different views on this connection at various times, it became clear over time that studying economic growth is not possible without considering the poverty and employment levels of the given country. After many decades of research, there is a generally accepted view among economists that an inverse relationship exists between poverty, unemployment, and economic growth. Therefore, the current task for economists is not to prove this inverse relationship but rather to determine the strength of the impact of growth on poverty and unemployment, specifically the magnitude of their elasticity with respect to growth. Economists A. Sargsyan and K. Davtyan also assessed the relationship between employment and GDP for Armenia using the ARIMAX model in their article "Employment trends and macroeconomic interactions". The researchers came to the idea that a 1% increase in GDP in Armenia implies a 0.26% reduction in the number of unemployed.

The studies in the literature also document the importance of a number of other internal factors affecting economic growth, such as: indicators characterizing human capital, government expenditures and state budget revenues, the level of domestic investment through savings, fiscal and monetary stimulus policies, state budget deficit, the country's debt level, the level of uneven income distribution, etc. The main conclusions of these studies are presented in the table.

Authors	Title of the research	The main conclusions
Ranis Gustav	Human Development and Economic Growth	The development of human capital directly contributes to the development of labor productivity and ensures an increase in economic output.[1]
Okoya, L. U., Omankhanlen, A.E., Okoh, J.I., Urhie, E., Ahmed, A.	Government expenditure and economic growth: The case of Nigeria	In Nigeria, capital expenditure has a positive effect on economic growth.[2]
Loizides, J., & Vamvoukas, G.	Government expenditure and economic growth: Evidence from trivariate causality testing	Using data on Greece, UK and Ireland, the analysis shows: i) government size Granger causes economic growth in all countries of the sample in the short run and in the long run for Ireland and the UK; ii) economic growth Granger causes increases in the relative size of government in Greece, and, when inflation is included, in the UK.[3]
Ahmad Ghazali	Analyzing the Relationship between Foreign Direct Investment Domestic Investment and Economic Growth for Pakistan	There is a mutual dependence between economic growth and national investment, in other words, investment affects economic growth, and the progress of the economy contributes to additional domestic investment.[4]
Pattillo et al.	External Debt and Growth	A doubling of the external debt-to-GDP ratio reduces economic growth by one-third to half a percentage point.[5]
Baum, A., C. Checherita-Westphal and P. Rother	Debt and Growth: New Evidence for the Euro Area	When the debt-to-GDP ratio is less than 67 percent, it has a positive and statistically significant effect on GDP.[6] This ratio is the threshold of sensitivity, which was defined by the famous Armenian economist A. Tavadyan.
Amir Rubin and Dan Segal	The Effects of Economic Growth on Income Inequality in the US	In the half century preceding the crisis in the United States, the level of unequal distribution of income affected economic growth.[7]

Table 1: A brief description of the research done by various authors

Summarizing the results of research in the literature, it is crucial to note that studies focused on economic growth within specific groups of countries or at different levels of development may not be universally applicable. Therefore, it is necessary to consider the specifics of each country when determining the importance and significance of various factors. The latter has also received certification in the roadmap for medium-term and long-term economic growth developed by the International Monetary Fund ('IMF'). The main approach, depending on the level of development of the country, involves the development of differentiated policies. The International Monetary Fund claims in one of its studies that, for example, research and development (R&D) investments are more effective in developed countries, instead developing countries should focus more on infrastructure and supply development [34]. This can be explained by the higher marginal yield from infrastructure in developing countries and the need for a favorable environment for research and development (R&D) work and the uncertainty of results.

Summarizing the results of the empirical and theoretical studies studied in the article, it can be concluded that:

- Stable economic growth is the outcome of the harmonious coordination of various factors that collectively contribute to creating a stable environment for that economy.
- Some studies have concluded that there is a positive causal relationship between investment and economic growth. However, there are other studies that show that this connection is weak or non-existent.
- International trade has become a primary subject of study for explaining economic growth, whether it is through trade liberalization and openness or the export growth hypothesis. In general, most studies have concluded that high exports increase and stabilize the rate of economic growth.
- The exchange rate has a significant impact on economic growth, and its fluctuations are an important factor influencing the stable economic growth of a country, particularly in the context of developing countries.
- Internal factors have a leverage effect to increase or decrease the influence of external factors, which is especially evident in the case of a developing country.
- In countries with small open economies, macroeconomic stability requires the implementation of precise risk management policies, taking into account the challenges posed by external shocks.
- The vulnerability of countries with small open economies to external shocks is based on the structure of the country's economy, trade dependence, as well as limited opportunities to implement policies.

Stable economic growth in both developed and developing countries is the result of the combined impact of internal and external factors. Internal factors, such as investment, infrastructure, and policy frameworks, are crucial for creating a stable environment for growth. External factors, including global demand, trade, and foreign investment, also play a vital role, especially for small open economies. Effective risk management and policy strategies are essential to mitigate external shocks and maintain macroeconomic stability. The research emphasizes that each country's specific circumstances must be considered when developing growth policies.

Students Presentation session 2

ID: 007

UNDERSTANDING CONSUMER BEHAVIOR: FROM TRADITIONAL TO DIGITAL CONSUMER INSIGHTS

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Abstract:

This research explores the evolution of consumer behavior in the digital age. Traditionally, consumer decision-making relied on limited information sources like advertising and word-of-mouth recommendations. However, the digital revolution has fundamentally reshaped this landscape. Consumers now have unprecedented access to information, enabling them to research products, compare prices, and gather user reviews before purchasing. This shift towards empowered decision-making necessitates a focus on building positive online reputations, providing transparent information, and ensuring product quality for businesses.

The rise of e-commerce platforms further transforms consumer behavior. The convenience of online shopping allows for browsing and purchasing from anywhere, at any time. Additionally, online retailers leverage consumer data to personalize recommendations, catering to individual preferences. This research delves into the key characteristics of digital consumer behavior, including its impact on marketing strategies and the need for businesses to adapt to this evolving environment.

Keywords: Consumer behavior, digital marketing, e-commerce, online shopping, consumer empowerment

Introduction

The ultimate goal of goods and services production in economic systems is consumption—the realization of goods or services and their consumer value or utility characteristics. Consumption is one of the key components of society's economic life, with its volume and structure determined by production. At the same time, consumption itself also influences production by either promoting or restraining its development. For this reason, the analysis of consumer behavior is of great importance: producers can determine the pricing levels of their products, and buyers can make more efficient decisions.

In the modern free market economic and political system, interest in studies related to consumer behavior is steadily increasing amid the variety of goods and services. Organizations can no longer produce a product or provide a unique service. Simultaneously, consumers may have dozens of options to satisfy a specific need. Under these conditions, consumer behavior research allows organizations to deeply uncover hidden consumer needs or find more innovative approaches to satisfying existing demands. At the same time, it enables consumers to understand the factors influencing their decisions to make consumption more rational.

Literature review

Consumer behavior research has undergone significant evolution, from traditional models focused on rational decision-making and social influences to contemporary frameworks addressing the complexities of the digital age. Traditional models, such as the Learning Model based on Maslow's Hierarchy of Needs [1], the Psychoanalytical Model rooted in Freud's theories[2], the Sociological Model informed by Veblen's analysis of social class and consumption[3], and the Economic Model emphasizing rational utility maximization[4], have provided foundational insights into how consumer needs, social factors, and economic considerations drive purchasing behavior. These models have guided marketers in understanding consumer motivations and

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[1] **Maslow, A. H. (1943).** *A Theory of Human Motivation*. Psychological Review, 50(4).

[2] **Freud, S. (1923)**. *The Ego and the Id*. The Standard Edition of the Complete Psychological Works of Sigmund Freud, Volume XIX

[3] **Veblen, T. (1899)**. *The Theory of the Leisure Class*. New York: Macmillan.

[4] **Marshall, A. (1890)**. *Principles of Economics*. London: Macmillan.

preferences, influencing product placement, emotional appeals, and price strategies. With the advent of digital technology, contemporary models have emerged to address the new dimensions of consumer behavior. The Engel-Kollat-Blackwell (EKB) Model outlines a detailed decision-making process and is crucial for understanding online consumer behavior, as seen in platforms like Amazon. The Technology Acceptance Model (TAM) , which focuses on perceived usefulness and ease of use, remains vital for analyzing technology adoption and user experience (Davis, 1989; Venkatesh & Davis, 2000). Additionally, the Omnichannel Consumer Behavior Model reflects the integration of online and offline experiences, as demonstrated by Nike's successful strategy (Piotrowicz & Cuthbertson, 2014), while Behavioral Targeting and Personalizationemphasize the role of data-driven marketing in enhancing user engagement (Grewal et al., 2016). These contemporary models underscore the importance of adapting to digital interactions and personalized experiences in today's interconnected marketplace.

Methodology

1.**Case Studies**: Detailed case studies of Amazon, Apple, Nike, and Spotify are used to illustrate the practical application of both traditional and modern models. These case studies provide insights into how these companies use consumer behavior models to enhance customer experience and drive business strategies.
2. **Data Analysis**: Quantitative data is gathered from industry reports and market research studies, including statistical databases and surveys. This data is analyzed to identify trends in digital consumer behavior, e-commerce practices, and personalization strategies.
3.**Comparative Analysis**: Traditional and contemporary models are compared to assess their relevance and effectiveness in explaining current consumer behavior. This analysis evaluates how well each model adapts to the digital landscape and its impact on marketing strategies.
4. **Synthesis**: The findings from the literature review, case studies, and data analysis are synthesized to provide a comprehensive understanding of the evolution in consumer behavior and its implications for modern marketing practices.

Results and Discussion

The analysis reveals significant shifts in consumer behavior from traditional to digital contexts. Traditional models, such as the Economic and Sociological models, primarily focus on rational decision-making and the influence of societal norms, which still hold relevance but are increasingly complemented by modern approaches. For instance, while the Economic Model highlights price sensitivity and rational choice, contemporary models like the Technology Acceptance Model (TAM) and the Omnichannel Consumer Behavior Model underscore the importance of perceived usefulness, ease of use, and seamless integration across platforms. Case studies illustrate how companies like Amazon and Nike leverage these insights: Amazon uses the Engel-Kollat-Blackwell Model to enhance the customer journey with personalized recommendations and streamlined purchasing, while Nike integrates online and offline experiences through its omnichannel strategy. Additionally, behavioral targeting and personalization have become critical in e-commerce, with companies like Spotify using data analytics to tailor content, thereby increasing engagement and customer satisfaction. The synthesis of these findings underscores that while traditional models provide foundational understanding, modern models offer a more nuanced view of consumer behavior in the digital age, highlighting the need for businesses to adapt to a more interconnected and data-driven marketplace. As mentioned, consumer behavior has been one of the most relevant research topics for many years. As a result, there have been developed many models that showcase consumer behavior when purchasing: both traditional and contemporary.

Traditional Models

Traditional behavior models were developed by economists hoping to understand what customers purchase based on their wants and needs. Traditional models include the following:
1. Learning Model
2. Psychoanalytical Model
3. Sociological Model
4. Economic Model

The Learning Model is based on Abraham Maslow's Hierarchy of Needs and helps understand the value a certain purchase has for the buyer. The bottom level of this hierarchy represents basic needs, and ascending sections describe learned needs, or secondary desires, that allow consumers to feel as though they've reached self-fulfillment.
The Learning Model says that consumers first make purchases to satisfy their basic needs and then move on to meet learned needs. For example,

a hungry customer would fulfill their need for food before a learned need to wear trendy clothing.

This model is used by companies that offer a wide range of different goods e.g. Target. When merchandising the company considers the urge of the buyer to get more priority goods first, and arranges them accordingly in the store.

The Psychoanalytical Model of consumer behavior is rooted in the theories of Sigmund Freud and emphasizes the influence of subconscious motives and emotions on buying decisions. According to this model, consumers are driven by deep-seated desires, fears, and fantasies that they may not be fully aware of. It suggests that purchasing behavior can be a way for consumers to express their inner desires and satisfy emotional needs rather than just logical or practical ones.

Key elements of this model include:

- Id, Ego, and Superego: The consumer's mind is divided into three parts—id (primitive desires), ego (reality-oriented decisions), and superego (moral standards). These parts influence purchasing behavior, where the id seeks pleasure, the ego balances desire with reality, and the superego enforces moral constraints.
- Symbolic Meaning: Products and brands can hold symbolic meanings, representing security, power, love, or status, which attract consumers on a subconscious level.
- Emotional Triggers: Marketers can use emotional appeals, imagery, and messages to tap into the subconscious desires of consumers, influencing their choices.

The Sociological Model underscores the importance of the social environment in shaping consumer behavior. It suggests that purchasing decisions are not solely driven by individual needs or psychological factors but are also deeply influenced by societal norms, social interactions, and cultural values. For businesses and marketers, recognizing these influences is crucial for developing strategies that effectively reach and resonate with their target audience.

- **Culture:** Shared beliefs, values, and customs shape consumer preferences and buying habits.
- **Social Class:** Income, education, and occupation affect product and brand choices.
- **Reference Groups:** Friends, family, and social groups impact decisions through trends, opinions, and peer pressure.
- **Family Influence:** Family members play a key role in shaping preferences and decisions.

- **Social Roles and Status:** People buy products that reflect their social roles and perceived status.

The **Economic Model** of consumer behavior focuses on the idea that consumers make purchasing decisions based on rational considerations of maximizing utility and value while minimizing costs. It assumes that consumers are informed, and rational, and seek to get the best possible deal.

- **Rational Decision-Making:** Consumers aim to maximize their utility (satisfaction) and make logical, informed choices based on price, quality, and utility.
- **Budget Constraints:** Consumers consider their financial limitations and make choices that fit within their budget, prioritizing essential over non-essential purchases.
- **Price Sensitivity:** Price is a major factor; consumers tend to choose lower-priced options or those perceived as offering better value for money.
- **Substitution Effect:** Consumers may switch to alternative products if the price of their preferred product rises or if substitutes offer better value.
- **Marginal Utility:** Consumers assess the additional satisfaction gained from consuming more of a product and make decisions based on diminishing returns (the more they consume, the less satisfaction each additional unit provides).

These models are the cornerstone on which new contemporary models rely, but may not provide the full picture nowadays. With the overwhelming amount of information that is available today, it's really hard to catch consumers' attention and the usual customer journey map (CJM) is mostly also digital. Here are some contemporary models and their implementation in companies.

Engel-Kollat-Blackwell (EKB) Model outlines the consumer decision-making process in five stages: problem recognition, information search, alternative evaluation, purchase decision, and post-purchase behavior. This model emphasizes how consumers use both internal and external information sources to make informed decisions.

Amazon uses the EKB model to guide customers through each stage. It triggers problem recognition through personalized ads, facilitates information search with detailed product pages and customer reviews, aids alternative evaluation with comparison tools, simplifies purchase decisions with one-click purchasing, and engages in post-purchase behavior through follow-up emails and recommendations. Amazon's recommendation

engine drives approximately 35% of its sales, illustrating the impact of effectively guiding consumers through the decision-making process.
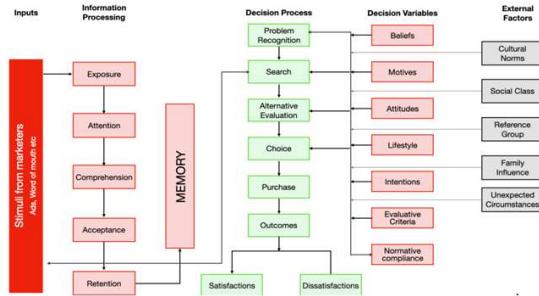
Technology Acceptance Model (TAM) focuses on how perceived usefulness (PU) and perceived ease of use (PEOU) influence consumers' attitudes toward adopting new technologies. This model is vital for understanding digital consumer behavior and technology adoption.

Companies like Apple and Google prioritize user-friendly interfaces (PEOU) and highly useful features (PU) to ensure high adoption rates of their technologies. By focusing on ease of use and usefulness, these companies enhance customer satisfaction and loyalty. A PwC study found that 73% of consumers consider customer experience a crucial factor in their purchasing decisions, aligning with the TAM's emphasis on ease of use and usefulness.
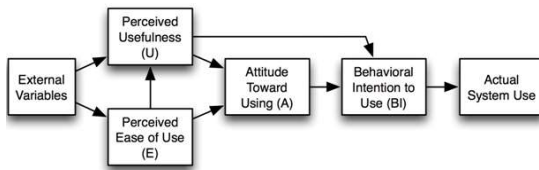
The Omni channel Consumer Behavior Model focuses on providing a seamless shopping experience across multiple platforms, integrating both online and offline channels. It reflects the modern consumer's preference for researching online and purchasing in-store, or vice versa. Nike's Omni channel approach integrates its physical stores with its online presence. The Nike app offers features such as in-store scanning, personalized workout plans, and virtual try-ons, ensuring a cohesive shopping experience. Nike

reported a 30% increase in digital sales in 2020, largely attributed to its successful omnichannel strategy, demonstrating the importance of a connected consumer experience.

Behavioral Targeting and Personalization in E-Commerce involves using data analytics to personalize marketing messages and product recommendations based on consumer behavior, significantly influencing buying decisions in the digital age.

Both Spotify and Amazon Prime utilize user data to tailor content recommendations, enhancing user engagement and satisfaction. This personalized approach helps retain customers and increase conversion rates.

A survey by Accenture found that 91% of consumers are more likely to shop with brands that provide relevant offers and recommendations, emphasizing the importance of personalization in digital consumer behavior. As we can see, modern models of behavioral economics are more data-oriented and personalized and are broadly used by large companies as they show excellent results.

Conclusion:

Traditional consumer behavior models, such as the Economic and Sociological models, primarily focus on rational decision-making and the influence of societal norms, often assuming that consumer's act logically based on their needs and available information. These models emphasize factors like income, social class, and cultural values in shaping purchasing behavior. In contrast, modern models, such as the Technology Acceptance Model (TAM) and Omnichannel Consumer Behavior Model, account for the complexities of digital interactions and the impact of technology on consumer decisions. They highlight the importance of user experience, personalization, and the integration of multiple channels, reflecting how consumers today navigate a more interconnected and data-driven marketplace. As a result, modern models provide a more dynamic and nuanced understanding of consumer behavior in the digital age, considering psychological and technological influences that traditional models might overlook.

ID: 008

MASTERING THE ART OF MARKETING: SOCIAL MEDIA, BUZZ MARKETING, AND MODERN STRATEGIES

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Abstract:

This paper explores the evolution of marketing strategies in the digital age, focusing on social media marketing, buzz marketing, and modern marketing approaches. It examines how these strategies complement traditional marketing methods and their importance for brand building and customer engagement. The study presents a detailed case analysis of Starbucks, highlighting the company's innovative use of mobile technology, personalization, and loyalty programs. The research demonstrates how Starbucks effectively leverages social media platforms, creates buzz through limited-time offerings, and implements a tiered membership system to drive customer loyalty and sales. The paper concludes that the integration of modern marketing strategies with traditional methods is crucial for brands to maintain competitiveness and relevance in today's rapidly changing digital landscape.

Keywords: Social Media Marketing, Buzz Marketing, Modern Marketing Strategies, Digital Marketing, Brand Loyalty, Starbucks

Introduction:

The landscape of marketing has undergone a significant transformation in recent years, driven by technological advancements and changing consumer behaviors. Traditional marketing methods, while still valuable, are no longer sufficient on their own to capture and retain customer attention in an increasingly digital world. This shift has given rise to new marketing paradigms, particularly social media marketing, buzz marketing, and a host of modern strategies that leverage digital platforms and data analytics.

Social media marketing has emerged as a crucial component of modern marketing strategies, allowing brands to connect with their target audiences in real-time and foster two-way communication. Simultaneously, buzz marketing has gained prominence as a method to generate excitement and word-of-mouth promotion, tapping into the power of consumer-to-consumer communication. These approaches, combined with other modern marketing strategies such as content marketing, influencer partnerships, and data-driven personalization, have revolutionized how brands interact with their customers.

This paper aims to explore the interplay between these modern marketing strategies and traditional marketing methods, examining their collective impact on brand building, customer engagement, and sales performance. By analyzing the strategies employed by successful brands, particularly Starbucks, we seek to understand how companies can effectively integrate various marketing approaches to create a cohesive and impactful marketing ecosystem.

The research addresses several key questions:

1. How do social media marketing and buzz marketing complement traditional marketing efforts?
2. What role do modern marketing strategies play in building brand loyalty and driving customer engagement?
3. How can companies effectively implement and measure the success of these strategies?
4. What can other brands learn from Starbucks' innovative approach to modern marketing?

By examining these questions, this study contributes to the growing body of knowledge on digital marketing strategies and provides practical insights for marketers seeking to navigate the complex landscape of modern consumer engagement.

Literature Review: The evolution of marketing strategies in the digital age has been a subject of extensive research in recent years. This literature

review examines key studies and theoretical frameworks related to social media marketing, buzz marketing, and modern marketing strategies, with a focus on their integration with traditional marketing methods and their impact on brand building.

Social media marketing has emerged as a critical component of modern marketing strategies[5]. Kaplan and Haenlein (2010) define social media as "a group of Internet-based applications that build on the ideological and technological foundations of Web 2.0, and that allow the creation and exchange of User Generated Content." Their study highlights the potential of social media platforms to facilitate direct engagement between brands and consumers, enabling real-time communication and feedback.

Tuten and Solomon (2017) further explore the impact of social media on marketing strategies, emphasizing its role in brand awareness, customer relationship management, and sales promotion[6]. They argue that social media marketing allows for more precise targeting and personalization compared to traditional marketing methods, leading to higher engagement rates and return on investment.

Buzz marketing, also known as word-of-mouth marketing, has gained significant attention in marketing literature. Rosen (2009) defines buzz marketing as "the amplification of initial marketing efforts by third parties through their passive or active influence." His research emphasizes the power of consumer-to-consumer communication in shaping brand perceptions and driving purchasing decisions.

Hughes (2005) explores the six elements of buzz marketing: taboo, unusual, outrageous, hilarious, remarkable, and secrets. His work provides insights into how brands can create memorable experiences that naturally lead to discussions among consumers, amplifying the reach and impact of marketing efforts.

The integration of modern marketing strategies with traditional methods has been a topic of growing interest. Chaffey and Ellis-Chadwick (2019) discuss the concept of "digital marketing" as an umbrella term encompassing various online marketing techniques, including search engine optimization, content marketing, and email marketing. They argue for a holistic approach that combines digital and traditional marketing methods to create a seamless customer experience across all touchpoints.

Kotler et al. (2017) introduce the concept of "Marketing 4.0," which emphasizes the shift from traditional to digital marketing in the context of the evolving consumer journey[7]. Their work highlights the importance of omnichannel marketing strategies that blend online and offline experiences to meet the expectations of today's connected consumers.

The impact of modern marketing strategies on brand loyalty and customer engagement has been extensively studied. Hollebeek et al. (2014) explore the concept of "customer brand engagement" in social media contexts, proposing a framework that links engagement to brand loyalty and positive word-of-mouth.

De Vries and Carlson (2014) investigate the role of social media marketing in creating brand loyalty among millennials. Their research suggests that interactive and personalized content on social media platforms can significantly enhance brand loyalty and purchase intentions among younger consumers[8].

1.1 What is Social media marketing and why is it important

Social media marketing has emerged as a crucial component of modern marketing strategies. It involves leveraging social media platforms to connect with target audiences, promote products or services, and build brand awareness. This approach has become increasingly important as consumers spend more time on digital platforms, making it essential for businesses to establish a strong online presence.

The landscape of social media marketing encompasses various platforms, each with its unique characteristics and user demographics.

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Facebook, with its vast user base, offers broad reach and sophisticated targeting options. Instagram, known for its visual content, is particularly effective for lifestyle and product-focused brands. Twitter provides real-time engagement opportunities and is often used for customer service and news dissemination. LinkedIn caters to professional networking and B2B marketing, while YouTube dominates video content. Emerging platforms like TikTok have gained popularity, especially among younger demographics, offering new avenues for creative marketing campaigns.

The integration of social media marketing with traditional marketing methods has revolutionized the way brands communicate with their audiences. Unlike traditional marketing, which often relies on one-way communication, social media enables real-time, two-way interactions between brands and consumers. This immediate feedback loop allows companies to quickly adapt their strategies and respond to customer needs. Moreover, social media marketing offers more precise targeting capabilities compared to traditional media, allowing brands to reach specific demographics based on interests, behaviors, and geographic locations.

The cost-effectiveness of social media marketing is another factor that complements traditional marketing efforts. While television or print advertisements can be prohibitively expensive for smaller businesses, social media platforms offer advertising options at various price points, making it accessible to companies of all sizes. Additionally, the ability to track and measure results through detailed analytics provides marketers with valuable insights into campaign performance, allowing for data-driven decision-making and optimization of marketing strategies.
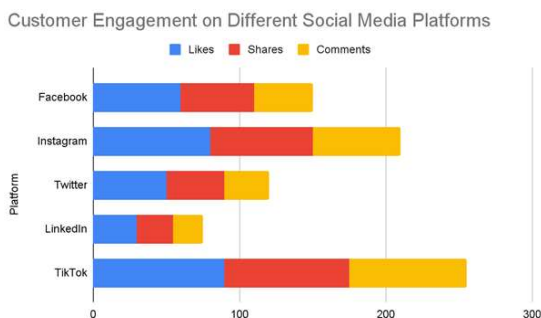
Chart 1: Customer Engagement on Different Social Media Platforms[9]

For brands, the importance of social media marketing cannot be overstated. It serves as a powerful tool for building and maintaining brand awareness and loyalty. Through consistent posting and engagement, brands can stay top-of-mind for consumers and cultivate a loyal following. Social media also provides a platform for brands to showcase their personality and values, helping to create emotional connections with their audience.

Furthermore, social media marketing plays a crucial role in driving website traffic and sales. By sharing content and promotions on social platforms, brands can direct users to their websites or e-commerce stores. The viral nature of social media content can also lead to exponential reach, as users share content within their networks, potentially reaching audiences far beyond the brand's immediate followers.
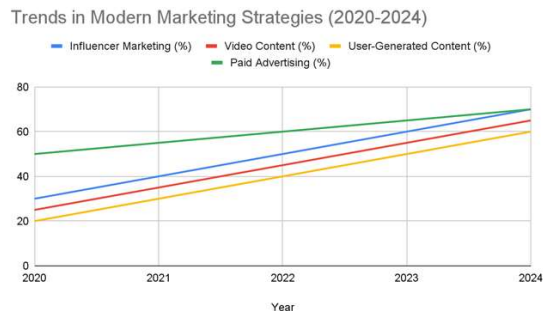
Chart 2: Trends in Modern Marketing Strategies (2020-2024)[10]

Lastly, social media provides brands with unprecedented access to market insights and trends. By monitoring conversations and engagement on these platforms, companies can gain a deeper understanding of their target audience's preferences, pain points, and behaviors. This information can inform product development, marketing strategies, and overall business decisions.

1.2 What is Buzz marketing as a key to community building

Buzz marketing, often referred to as word-of-mouth marketing, is a strategy designed to generate excitement, interest, and conversation about a product, service, or brand. This approach hinges on the idea of creating a "buzz" that encourages consumers to talk about the brand, thereby increasing its visibility and credibility. Unlike traditional marketing strategies that rely heavily on

[9] https://www.marketingcharts.com/digital/social-media-231684

[10] https://blog.hubspot.com/marketing/marketing-trends

direct advertising, buzz marketing focuses on leveraging the power of consumer conversations and social interactions to promote a brand.

The essence of buzz marketing lies in its ability to create memorable and engaging experiences that naturally lead to discussions among consumers. These experiences can be crafted through various means, including the launch of innovative products, the execution of creative marketing campaigns, or the use of influencers and brand advocates. The goal is to generate a level of excitement that compels consumers to share their experiences with others, either in person or through digital platforms.

Buzz marketing effectively complements traditional marketing efforts by amplifying their reach and impact. Traditional marketing channels, such as television, radio, and print, often serve as the initial touchpoints that introduce a brand to a broad audience. However, the engagement generated through these channels can be limited by their one-way communication nature. Buzz marketing addresses this limitation by fostering two-way interactions between the brand and its audience. As consumers discuss and share their experiences, the brand message is disseminated more widely and authentically, reaching potential customers who might not have been exposed to traditional advertising.

Moreover, buzz marketing enhances the effectiveness of traditional marketing by adding a layer of social proof. When consumers hear about a brand from their peers rather than directly from the company, they are more likely to trust the information and consider making a purchase. This trust is a critical factor in the decision-making process, particularly in a market where consumers are increasingly skeptical of traditional advertising.

For brands, the importance of buzz marketing cannot be overstated. In an age where consumers are bombarded with advertising messages, cutting through the noise and capturing attention has become increasingly challenging. Buzz marketing offers a solution by creating content that is inherently shareable and engaging, making it easier for brands to stand out in a crowded market.

Furthermore, buzz marketing plays a critical role in building brand loyalty and advocacy. When consumers actively participate in spreading the word about a brand, they become more emotionally invested in it. This emotional connection fosters brand loyalty, as consumers feel a sense of ownership and pride in the brand's success. Over time, these loyal customers can evolve into brand advocates, who not only continue to promote the brand but also defend it against negative feedback or criticism.

In addition to enhancing brand loyalty, buzz marketing provides valuable insights into consumer behavior and preferences. By monitoring the conversations and feedback generated through buzz marketing campaigns, brands can gain a deeper understanding of what resonates with their audience. These insights can be used to refine future marketing strategies, product offerings, and customer experiences, ensuring that the brand remains relevant and responsive to consumer needs.

1.3 Modern Marketing Strategies: Integration with Traditional Marketing and Brand Importance

Modern marketing strategies encompass a broad range of techniques and approaches that have evolved in response to the digital revolution and changing consumer behaviors. These strategies include digital marketing, content marketing, influencer marketing, and data-driven marketing, among others. They focus on leveraging technology, personalization, and real-time engagement to connect with consumers more effectively. As businesses navigate the complexities of the contemporary market, modern strategies have become essential in enhancing traditional marketing efforts and ensuring long-term brand success.

At the core of modern marketing strategies is the use of digital platforms to reach and engage with target audiences. Digital marketing, which includes search engine optimization (SEO), email marketing, and online advertising, allows brands to connect with consumers in the spaces where they spend much of their time—on their devices. Unlike traditional marketing, which often casts a wide net, digital marketing enables precise targeting, ensuring that brand messages are delivered to the right audience at the right time.

Content marketing is another key component of modern strategies, focusing on creating and distributing valuable, relevant, and consistent content to attract and retain a clearly defined audience. This approach differs from traditional advertising, which often emphasizes direct product promotion. Instead, content marketing aims to educate, entertain, or inspire consumers, building trust and credibility over time. By providing useful information or engaging storytelling, brands can position themselves as thought leaders in their industry, fostering deeper connections with their audience.

Influencer marketing leverages the reach and credibility of individuals who have a significant following on social media platforms. By partnering with influencers who align with their brand values and target audience, companies can tap into the influencer's established community, gaining

exposure and credibility through association. This strategy has become particularly effective in reaching younger demographics, who often look to influencers for product recommendations and lifestyle inspiration.

Data-driven marketing is another hallmark of modern strategies. By collecting and analyzing consumer data, brands can gain insights into customer preferences, behaviors, and trends. This information allows for the creation of highly personalized marketing campaigns that resonate more deeply with consumers. Personalization, whether through targeted emails, customized product recommendations, or tailored social media ads, enhances the customer experience and increases the likelihood of conversion.

Modern marketing strategies complement traditional marketing methods by enhancing their effectiveness and reach. While traditional marketing, such as print ads, television commercials, and direct mail, remains valuable for building brand awareness and credibility, modern strategies bring a level of precision, personalization, and interactivity that traditional methods cannot achieve on their own. For example, a traditional television ad can be supported by a social media campaign that drives engagement and directs viewers to an online store, creating a seamless and integrated marketing experience.

The importance of modern marketing strategies for brands lies in their ability to adapt to the rapidly changing digital landscape. Consumers today expect more personalized, relevant, and timely interactions with brands. Modern strategies allow companies to meet these expectations by delivering the right message at the right time through the right channels. This adaptability not only enhances the effectiveness of marketing efforts but also helps brands stay competitive in an increasingly crowded marketplace.

Moreover, modern strategies provide brands with the tools to measure and analyze the impact of their marketing campaigns in real-time. Unlike traditional methods, which often require longer periods to assess effectiveness, modern strategies offer immediate feedback through metrics such as click-through rates, conversion rates, and social media engagement. This data-driven approach enables brands to make informed decisions, optimize their campaigns, and maximize their return on investment.

Chart 3: Influencer Marketing Reach vs. Traditional Advertising[11]

For brands, embracing modern marketing strategies is crucial for building and maintaining a strong presence in today's digital-first world. These strategies allow brands to reach new audiences, deepen relationships with existing customers, and drive growth in ways that were not possible with traditional marketing alone. As consumers continue to demand more from the brands they engage with, the importance of modern strategies will only increase, making them an indispensable part of any successful marketing plan.

In conclusion, modern marketing strategies are essential tools that enhance and complement traditional marketing efforts. Their focus on digital engagement, personalization, and data-driven decision-making allows brands to connect with consumers more effectively and efficiently. As the marketing landscape continues to evolve, brands that adopt and integrate these modern strategies into their overall marketing approach will be better positioned to succeed in an increasingly competitive environment.

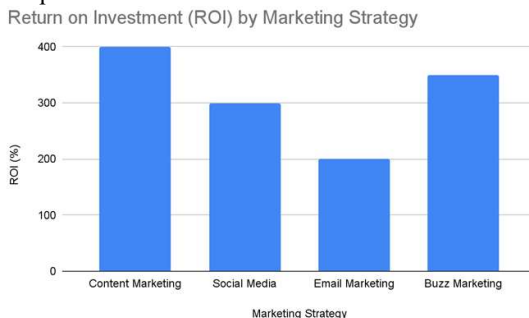Chart 4: Return on Investment (ROI) by Marketing Strategy[12]

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[11] https://francis-press.com/uploads/papers/wKAbIoqeKGQlPV7KEKAeh6hDUOgf0IzUwfDYekwF.pdf

[12] https://support.sellforte.com/en/articles/6975746-return-on-investment-roi-definition-and-charts

2. Key study of Starbucks: Starbucks has embraced modern marketing strategies, particularly in the realms of mobile technology and personalization.

The Starbucks Rewards app is a cornerstone of their modern marketing approach. The app combines a loyalty program, mobile payment system, and personalized marketing tool. As of 2021, the Starbucks app had over 19.3 million active users in the U.S., accounting for nearly 50% of the company's sales. The app uses data analytics to offer personalized drink suggestions and targeted promotions, increasing customer engagement and sales.

Starbucks has also leveraged augmented reality (AR) in its marketing efforts. In 2017, they launched the "Starbucks Cup Magic" app in China, which allowed customers to unlock animated AR experiences by pointing their phones at their coffee cups. This innovative approach not only engaged customers but also encouraged them to share their experiences on social media, further amplifying the campaign's reach.

Another modern strategy Starbucks employs is its commitment to sustainability and social responsibility, which resonates strongly with younger consumers. In 2018, Starbucks pledged to eliminate plastic straws from all its stores by 2020, replacing them with recyclable strawless lids or alternative-material straws. This initiative generated significant positive press and aligned with the values of environmentally conscious consumers.

Starbucks also uses artificial intelligence to enhance its operations and marketing. In 2019, they introduced "Deep Brew," an AI system that helps optimize store labor allocation, inventory management, and even personalized marketing offers. By leveraging AI, Starbucks can provide a more efficient in-store experience and deliver more relevant marketing messages to individual customers.

2.1 How Starbucks Positions its Brand on Social Media.

Starbucks, the global coffee giant, has consistently demonstrated its prowess in leveraging various marketing strategies to maintain its position as a leader in the coffee industry[13]. This analysis examines how Starbucks effectively uses social media, buzz marketing, and modern strategies to engage customers and drive brand loyalty.

Starbucks excels in social media marketing, using platforms like Instagram, Facebook, and Twitter to create a strong brand presence and engage with customers. Their approach focuses on visual storytelling, user-generated content, and responsive customer service.

One of Starbucks' most successful social media campaigns was the #RedCupContest on Instagram. During the holiday season, Starbucks encourages customers to share creative photos with their red holiday cups. In 2014, the campaign generated over 40,000 submissions in just eight days. This user-generated content not only increased brand engagement but also provided Starbucks with a wealth of authentic, holiday-themed imagery to use in their marketing.

Starbucks also uses social media for swift customer service. On Twitter, their @StarbucksCare account responds to customer inquiries and complaints, often within minutes. This responsive approach has helped Starbucks maintain a positive brand image and resolve customer issues quickly and publicly.

Another notable social media initiative is the Starbucks "Tweet-a-Coffee" program. Launched in 2013, this Twitter-based campaign allowed users to send a $5 Starbucks Card eGift to a friend by simply tweeting "@tweetacoffee to @[friend's handle]." The campaign generated about $180,000 in additional sales within the first month, showcasing how Starbucks effectively turns social media engagement into direct sales[14].

2.2 Buzz Marketing in Starbucks

Starbucks is adept at creating buzz through limited-time offerings and visually striking products that are perfect for social media sharing.

The Unicorn Frappuccino, launched in 2017, is a prime example of Starbucks' buzz marketing prowess. This vibrant, color-changing drink was available for only five days, creating a sense of urgency and exclusivity. The bright pink and blue beverage was designed to be Instagram-worthy, and it quickly went viral on social media. Baristas reported making over 200 Unicorn Frappuccinos per store per day during the promotion, and Starbucks saw a significant spike in foot traffic and sales.

Another buzz-worthy campaign was the launch of the Pumpkin Spice Latte (PSL) each fall. Starbucks created a dedicated Twitter account for the PSL, anthropomorphizing the drink and building anticipation for its yearly return. In 2014, Starbucks even created a Facebook group called the "Pumpkin Spice Latte Fan Club," which gained over 11,000 members in its first two days. The PSL has become a cultural phenomenon, marking the

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[13] Gallaugher, J., & Ransbotham, S. (2010). Social media and customer dialog management at Starbucks. MIS Quarterly Executive, 9(4).

[14] Starbucks Coffee Company. (n.d.). https://www.starbucks.com/

unofficial start of fall for many consumers and generating significant media coverage each year.

Starbucks Card and Membership System: Before 2018, Starbucks customers had to buy a special card to get some benefits. The Star Premium Card costs around $12 and includes three benefits: three buy-one-get-one-free drinks, one breakfast coupon, and one 1-liter drink coupon. The card had to be activated before you could use it, and you couldn't use any of these benefits on your first purchase. Most customers didn't buy this card, but for those who visited Starbucks often, it was a good deal.[15] After getting the card, a cup of coffee would cost about $4, and you would also get free breakfast and a free liter of drink. Even though the benefits were small on their own, they made customers feel like they were getting a lot.[16] Starbucks also offered a Buy-One-Get-One-Free deal, which let customers bring a friend or family member to enjoy the offer, helping Starbucks get more potential customers.

Starbucks has three levels of membership: Silver Star, Jade Star, and Gold Star. You can move up to a higher level by spending more money.

- Silver Star members get 3 Friends & Family invitation coupons, 1 breakfast coffee coupon, and 1 1-liter drink coupon.
- Jade Star members get a birthday coupon and a coffee coupon (buy 3 get 1 free).
- Gold Star members get a special electronic gift card, birthday and anniversary coupons, a coffee coupon (buy 3 get 1 free), and one free coffee for every 10 purchases.

To go from Silver Star to Jade Star, you need to spend about $34. To go from Jade Star to Gold Star, you need to spend around $172. Starbucks also has a "little star" program to help customers level up faster. For every $7 spent, you earn one star (like virtual credits). You can see how many stars you have and how close you are to the next level in the Starbucks app. This encourages customers to visit Starbucks more often. When you collect enough stars, you unlock the next level of rewards. This system makes customers feel like they're getting a good deal, which increases their

satisfaction and encourages them to buy more drinks at Starbucks.[17]

Conclusion:

In conclusion, the convergence of social media marketing, buzz marketing, and modern marketing strategies is not merely an option but a necessity for brands seeking sustained success in today's complex marketplace. The dynamic interplay of these approaches enables brands to build meaningful relationships with consumers, foster loyalty, and drive consistent business growth. As the digital landscape continues to evolve, the brands that adeptly integrate these strategies into their marketing frameworks will be best positioned to thrive in the increasingly competitive environment.

Taking into account this study I'll suggest the brands:

- To create membership programs if you want to highlight loyalty and create a community
- To keep your social media accounts active and firstly understand which channels will be more profitable and will bring you sales
- The SEO, E-mail marketing, and UGCs are more likely to be used if you want to create a strong brand, and for smaller businesses that can be resource-intensive, however for the future these are important tools as well.

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ID: 009

TOURISM ON THE MOVE: REVITALISING DUTCH CITIES WITH SUSTAINABLE URBAN TOURIST MOBILITY

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ABSTRACT

Travel is on the move. This thesis seeks to guide Dutch policymakers in developing efficient, data-driven strategies for sustainable urban tourism mobility by incorporating tourism mobility into urban planning. The growing demand for urban mobility is driven by the tourism sector, yet traditional urban transport planning frequently ignores the special requirements of visitors, missing out on chances for long-term growth.

The following main research question forms the common thread in this thesis: How can urban policymakers effectively integrate strategies aimed at sustainable tourism mobility into urban mobility planning and policy to mitigate the negative impacts of increased tourism mobility?

The report assesses current policies for strengths and possibilities, finds obstacles to incorporating tourism mobility into urban transport planning, and suggests workable policy interventions. Data was collected through interviews with urban policymakers and tourism mobility experts using a qualitative methodology. Results point to serious gaps in the way that present urban mobility plans address the requirements of tourists. The absence of sufficient data is a significant barrier to efficient, data-driven policymaking. Strong stakeholder cooperation is necessary for effective integration, yet it frequently fails to materialise. Urban mobility networks, which mostly cater to commuters, mainly depend on fossil fuel transportation.

Within the scope of urban mobility, the research suggests that cities create targeted policies for visitor mobility. It is essential to establish a multi-stakeholder framework for consistent communication and collaboration. Policymakers ought to pursue sophisticated data collecting in order to properly comprehend the evolving expectations of tourism. Lawmakers should also support environmentally friendly transportation infrastructure. Enhancing visitor experiences and encouraging sustainable urban settings require incorporating tourism mobility into urban design. More egalitarian, sustainable, and hospitable urban mobility systems can result from addressing bottlenecks and putting the recommended methods into practice.

Keywords: Urban mobility, tourism mobility, policy development, sustainable mobility

1. Context Analysis

Urban Tourism. Tourism has surged, with international arrivals rising from 25 million in 1950 to 1.5 billion in 2019 (World Tourism Organization, 2020). This growth is expected to continue, with projections of 1.8 billion arrivals by 2030 (World Tourism Organization, 2012). Urban tourism, comprising short trips to cities, has significantly increased, with urban trips globally rising by 82% between 2007 and 2014. Urban tourism is driven by economic growth, lower transportation costs, and a growing middle class.

Major European cities like London and Paris have seen substantial tourism growth. London's international arrivals grew from 16.1 million in 2011 to 21.71 million in 2019 million (Office for National Statistics, 2023), and Paris reached 50.6 million arrivals in 2019 (CRT Paris Ile-de-France, 2024). In the Netherlands, urban tourism saw a 79.1% increase from 2010 to 2019, reaching 2.7 million Dutch tourists visiting urban areas (HZ Kenniscentrum Kusttoerisme, 2021).

Cities attract diverse tourists due to their range of experiences, from sightseeing to nightlife. Urban amenities, initially meant for locals, are now heavily used by tourists. Public spaces and events contribute to the dynamic urban environment (Rasoolimanesh et al., 2017).

Tourism Intricacies. Tourism is closely tied to its operating environment, with the destination's environment often being a key motivation for visits. The World Tourism Organization (UNWTO) and the United Nations Environment Program (UNEP) highlight that tourism contributes significantly to global emissions, particularly through transportation. Tourism-related transport emissions are projected to rise by

45% from 2016 onwards, with tourism mobility accounting for 18% of global transport emissions (UNWTO & UNEP, 2008)

In the Netherlands, tourism-related emissions amount to 18.1 megatons of CO_2, with 54% linked to transport Eijgelaar et al. (2021). This underscores the need for sustainable practices in tourism to mitigate its environmental impact.

Urban Mobility. The transport sector and tourism industry are closely linked, especially in urban areas. By 2023, 57% of the global population lives in urban settings, expected to rise to 68% by 2050 (Population Reference Bureau, 2023). This growth necessitates sustainable urban transportation to address environmental, social, and economic challenges. Without proactive measures, future cities may face inadequate public transit, overstretched infrastructure, and excessive reliance on motorized mobility (Van Audenhove et al., 2014).

Political Context. The Netherlands, committed to EU sustainability goals, aligns with the European Green Deal aiming for carbon neutrality by 2050. The Fit-For-55 package and European Climate Law set ambitious targets for reducing emissions, including transport emissions. The Dutch Climate Agreement echoes these goals, focusing on reducing CO_2 emissions and promoting sustainable mobility through regional plans and zero-emission vehicles (Rijksoverheid, 2019).

Despite political changes, the emphasis on sustainable mobility remains strong. Both governing parties Farmer-Citizen Movement and the Party for Freedom, despite skepticism on green politics, prioritize improved public transport and connectivity (BoerBurgerBeweging, 2023; Partij voor de Vrijheid, 2023).

Urban Mobility Planning. Regional and national governments prioritize sustainable urban mobility. The European Commission's Sustainable Urban Mobility Plan (SUMP) aims for balanced urban transport systems that ensure accessibility, safety, and efficiency. SUMPs, combined with regional mobility plans in the Netherlands, guide sustainable transport policies. However, tourism is inadequately addressed in these plans, despite its significant contribution to urban mobility, highlighting the need for integrated research and strategic planning.

2. Problem analysis

Research Problem. Page and Yue (2009) describe tourism and transport as a symbiotic relationship; transportation plays a crucial role in the tourism domain, as it allows tourists to travel from their place of origin to their destination and vice versa. This highlights the critical need to address the complex interaction between these two sectors, as well as the need of sustainable tourism-related transportation policies in mitigating environmental and socio-economic consequences.

Surprisingly however, despite the strategic interconnectedness between tourism planning and transport- and mobility management, the two domains have traditionally been viewed as distinct topics, both in literature and in practice (Scuttari et al., 2013). Especially the significance of transport and mobility in tourism destinations themselves has been conceptually neglected (Pechlaner et al., 2012). Rambaldi (2017) continues on this view by arguing that mobility is regarded as a precondition rather than an integrated asset of the tourist's experience. This neglect is nothing unprecedented. Hall (1999) already argued that both mobility and tourism research fail to provide a holistic and comprehensive framework for assessing tourism transit. Furthermore, while both sectors should be front running the sustainability debate, there is a clear lack of synergy or complementarily between transport and tourism, which especially degrades quality of life of the host destination.

The disregard of tourism is not only exemplified by the absence in research of the interconnectedness, but also governmental transport and mobility policy marginalizes the sector. The relationship between mobility and tourism has rarely received attention in policy planning (Rambaldi, 2017). Astonishingly, the White Paper on Transport by the European Commission (2011) has a striking absence of the word "tourism". Moreover, the aforementioned extensive 240-page Dutch Climate Agreement fails to include any reference to tourism, let alone the section on mobility (Rijksoverheid, 2019). Singular (regional) mobility plans of three major cities in the Netherlands – Amsterdam, Rotterdam and Utrecht – briefly touch upon the rise of urban tourism, but fall short in providing hands-on policy measures to ease the pressure tourism mobility is placing on its environment (Gemeente Amsterdam, 2013; Gemeente Rotterdam, 2020; Gemeente Utrecht, 2021). The absence of synergy between the two sectors, alongside inconsistent and contradictory decisions, hinders sustainable tourism targets. Inefficient approaches fail to address environmental (e.g., climate change, public health) and social (e.g., congestion) concerns. Therefore, the lack of interaction between transport and tourist sectors obstructs knowledge and development of transport for tourism and destination, ultimately affecting the broader goals of sustainable mobility

and tourism (Weston, et al., 2016). Sustainable urban mobility planning, as instrumentalised in SUMPs or Regional Mobility Plans, have the potential to bridge the gap between the transport and tourism sector as it facilitates synergy and integration of both domains. Nevertheless, the inclusion of tourism mobility remains overlooked in both mobility policy and practice. Policymakers often neglect to recognise that in order for an optimal and sustainable mobility system, it is imperative to consider not only mobility patterns of local citizens, but also transportation of tourists on the destination.

The underscored gap between the research areas of sustainable urban mobility planning and the integration of tourism mobility is what this thesis derives its scientific relevance from. Additionally, this research paper also brings along a societal relevance, which lies with the commissioner of this thesis. Over the past 20 years, Breda University of applied sciences' Centre for Sustainability, Tourism and Transport (CSTT) has amassed knowledge in the sustainable development of tourism and transport. The CSTT seeks to analyse and impact policy formation processes in order to advise policy actors in the creation of alternative policies that successfully address particular environmental concerns associated with tourism and mobility (Breda University of applied sciences, n.d.). The purpose of the CSTT is to direct the development of sustainable urban mobility planning and guarantee that, unlike in many cases, the importance of tourism mobility is not undervalued in the subsequent mobility plans. Given the burgeoning growth of urban tourism, as highlighted in section 1.1, a paradigm shift in policymaking becomes imperative to circumvent urban tourism mobility dwell associated with its negative impacts on the (socio-economic) environment. This thesis aims to furnish the CSTT with discerning insights and actionable recommendations concerning sustainable urban tourism mobility. These insights will serve as a cornerstone for the Centre's role within the tourism sector, enabling it to broadcast informed guidance to its industry partners and foster sustainable practices.

Research Objective. This thesis aims to gain insight into the intricacies of urban tourism mobility and its integration into sustainable urban mobility policies, in order to provide valuable knowledge and recommendations to BUas' Centre for Sustainability, Tourism and Transport, with the aim of providing policy actors an optimal approach to assimilate urban tourism into sustainable urban mobility planning.

Research Questions. *Main Research Question.* How can urban policymakers effectively integrate strategies aimed at sustainable tourism mobility into urban mobility planning and policy to mitigate the negative impacts of increased tourism mobility?

Sub questions
1. What are the perceived and projected impacts of unsustainable urban tourism mobility in the Netherlands?
2. What are bottlenecks policymakers encounter when integrating tourism mobility in urban mobility planning?
3. How are existing gaps in tourism and mobility planning bridged in order to optimally integrate tourism mobility in urban mobility planning?

3. Methodology

Research Method. This research employs a qualitative method to gather non-numerical data that probes into ideas, thoughts, and experiences, aiming for a deep understanding rather than collecting measurable facts (Creswell & Creswell, 2018). Qualitative research is iterative and often reveals unexpected themes, unlike the more superficial quantitative methods.

Additionally, this study uses an inductive approach, focusing on exploring subjects from the participants' perspectives, particularly policymakers in urban nodes (Hillman & Radel, 2018). Inductive research clarifies developing phenomena, such as sustainable urban mobility policy integration with tourism, and uncovers various interpretations of these emerging trends (Creswell & Creswell, 2018; Hillman & Radel, 2018).

Data Collection Method. Semi-structured interviews were chosen for data collection, featuring both closed and open-ended questions to elicit comprehensive responses from participants (Creswell & Creswell, 2018; Hillman & Radel, 2018). This method allows follow-up questions, facilitating an exploratory approach. An interview guide was developed according to Creswell and Creswell's (2018) criteria, ensuring consistency across interviews while allowing flexibility for deviation to capture relevant insights. Interviews were recorded and supplemented with handwritten notes to mitigate any technical failures. Unsolicited accounts provided after recording were noted manually to preserve the flow of information (Hammersley & Atkinson, 2019). **Data Characteristics**. The sample included two subgroups: experts in sustainable urban mobility

and policymakers involved in urban mobility planning in the Netherlands. According to Creswell and Creswell (2018), the sample size was determined by data saturation, achieved after 14 interviews (8 experts, 6 policymakers) conducted between April and June 2024. Inclusion criteria were cities eligible for sustainable urban mobility planning and receiving significant tourism (European Commission, 2021).

Research Process. The research began with a literature review to provide background information and guide the field research. Potential respondents were contacted via LinkedIn and email, with interviews arranged and conducted, mostly online due to scheduling constraints.

Data Analysis. Thematic analysis was used to analyze the data, identifying recurring themes through coding (Braun & Clarke, 2006; Creswell & Creswell, 2018). The process involved open coding to categorize data, followed by axial coding to identify relationships among categories, and selective coding to determine overarching themes (Williams & Moser, 2019).

Validity and Reliability. Validity was ensured by involving expert opinions and triangulating data from diverse stakeholders, enhancing internal and external validity (Andrade, 2018; Creswell & Creswell, 2018). Detailed transcription provided rich data descriptions, further strengthening validity.

Reliability was maintained by using a consistent interview guide and conducting all interviews by the same researcher, ensuring data consistency (Creswell & Creswell, 2018). Interviews were recorded and transcribed to enhance reliability.

Limitations. Potential biases, particularly political bias from urban policymakers, could affect data integrity (Creswell & Creswell, 2018; Auerbach, 2012). Conducting interviews online posed another limitation due to reduced visibility of non-verbal cues, though studies suggest this does not significantly impact validity (Lobe et al., 2022; Oates et al., 2022).

4. Conclusions

In the ultimate chapter of the report, a conclusion to the research will be drawn. The conclusion is divided into two sections. Firstly, the sub-research questions will be addressed, utilising the research results detailed in an earlier section. Subsequently, the main research question will be answered.

Research Question I

What are the perceived and projected impacts of unsustainable urban tourism mobility in the Netherlands?

In this research, the effects of unsustainable tourism mobility were examined. Throughout the research, it became evident that these impacts can be divided into two categories; those that are already being observed and those that are anticipated to emerge in the near future.

Respondents concur that urban tourism-related congestion is a serious problem, particularly in major cities as Amsterdam and The Hague. While it is worth noting that cities in the Netherlands are of a very distinct character and physical setting, resulting in varying visitor profiles, a widespread agreement exists that multiple urban environments in the Netherlands have reached their carrying capacity. As a result, cities become less livable due to traffic, stress on the urban infrastructure, and increasing air and noise pollution. The increase in tourists puts a lot of strain on the mobility networks, frequently beyond their capabilities. Increased mobility raises the risk of traffic accidents, especially when visitors are unfamiliar with the mobility customs of the area, such as riding a bicycle.

A latter notorious effect of increased mobility demand is the situation where transportation supply falls short in catering for the needs of both residents and visitors. Particularly in the case of public transport, residents find themselves competing with tourists for the limited available mobility. While not yet widely observed due to distinct temporal patterns between residents and visitors, this competition is critically anticipated to intensify as mobility numbers continue to increase, especially in peak seasons.

While respondents acknowledge the economic benefits of increased mobility, given the rise in ticket sales and road usage, these advantages need to be balanced against the negative consequences that are already observed or forecasted.

Research Question II

What are bottlenecks policymakers encounter when integrating tourism mobility into urban mobility planning?

The starting point of adequate urban policies is, as has been collectively agreed upon by the respondents, a comprehensive data set. Nevertheless, it is evident that the currently available data is insufficient to build effective policy upon. This results in haphazard and ad hoc policymaking as opposed to specific strategies.

Resulting from the hiatus in data is a significant gap that exists between the mobility and tourism domains. Respondents highlighted how the industries traditionally operated independently, a

situation which is only starting to transform in the very recent years. Because of the neglect of tourism in urban mobility policies, a critical volume in mobility and traffic is omitted, allowing mobility to increase in an unsustainable and unmonitored way. As a result, there is a near-anarchical situation where no authority is in charge of tourism mobility policy, resulting in a lack of coherent policymaking and coordination between the sectors.

Furthermore, ignorance of local customs and transport infrastructure can lead to hazardous situations and impede the uptake of sustainable forms of travel. While this factor of uncertainty leads to dangerous situations regarding road safety, it also leads to a modal shift to the universal taxi system which is easily understood by visitors, however not sustainable. Aside from the complexity of e.g. public transport systems, respondents highlight the absence of adequate tourist tariffs – or the marketing and communication regarding these. Hence, the Dutch public transport system has too few price incentives to truly increase demand for sustainable modes of transport. Moreover, the language barrier poses additional threats to the adequate execution of mobility policies.

Additionally, whereas urban policymakers see merit in shared mobility in presenting an opportunity to address urban mobility issues, these systems have their own set of obstacles. Problems like exorbitant prices, restricted accessibility, and geographically-technological constraints impede the extensive use of shared mobility solutions. Furthermore, shared mobility systems frequently do not replace the need for car transport, but instead supplant demand for public transport. Herein, one has to consider the general compactness of Dutch cities. Therefore, it is not regarded as the ultimate solution to decrease the demand for unsustainable modes of transport.

In light of these challenges, Dutch cities must manage tourism mobility with a comprehensive and coordinated strategy. It is imperative to undertake initiatives that seek to close the knowledge gap between the mobility and tourism sectors, improve data accessibility, encourage environmentally friendly travel, and enhance visitor information. Cities can create urban transportation systems that are more inclusive, resilient, and efficient while meeting the varied requirements of both locals and visitors by placing a high priority on cooperative efforts.

Research Question III
How are existing gaps in tourism and mobility planning bridged in order to optimally integrate tourism mobility in urban mobility planning?

The respondents' views have illuminated the difficulties and complexities involved in incorporating tourism mobility into urban mobility policies in Dutch cities. To overcome these issues, the multi-stakeholder approach, which emphasises the value of collaboration between public and private stakeholders, has emerged as a critical strategy to close the gap between the tourist industry and transportation sectors. By bridging current gaps in data and policy, this cooperative approach is crucial for setting the stage for successful policymaking.

In this intersectoral approach, it is essential to comprehend the needs and wants of tourists in order to create customized approaches that support sustainable modes of transportation. The use of modal shift strategies, especially through price incentives and customized information have been identified crucial in motivating travellers to choose environmentally friendly forms of transportation. By spreading the demand for mobility temporally and spatially through price differentiation, the modal shift towards sustainable modes of transport is optimized without the need for radical physical infrastructural redevelopment. By offering incentives and clear information, in various languages tailored to the visitor profile, policymakers can nudge tourists to make decisions that improve urban livability.

Models like STOMP and the Trias Mobilica can be deployed by policymakers to encourage sustainable transport while lowering the demand for conventional mobility. Enhancing sustainable travel options can be achieved by incorporating electric bicycles, boosting cycling through shared bicycle networks such as the OV-bike, and improving walking routes.

Although implementing Mobility as a Service will involve overcoming obstacles like accessibility and interoperability, the concept has appeared to be a promising catalyst for increasing multimodal transportation integration.

The implementation of low-traffic zones, programmes to improve public transportation accessibility, and the establishment of Park and Ride services are all attempts to deter the use of private automobiles in urban settings. While general public opinion regarding these drastic push methods should be closely monitored, these are policy initiatives which have been proven effective, as the liveability of cities increases.

All things considered, the research highlights the significance of a holistic, integrated, intersectoral urban mobility planning approach. Urban areas can

become more lively and inclusive, more appealing, and more environmentally sustainable by emphasising sustainable mobility options and decreasing the need for private vehicles. Dutch cities can set the stage for an urban transportation scene that is sustainable and welcoming to tourists by working together and enacting creative policies.

Main Research Question
Finally, in the ultimate part of this section, the main research question is answered. As introduced in section 2.3, the main research question is;
How can urban policymakers effectively integrate strategies aimed at sustainable tourism mobility into urban mobility planning and policy to mitigate the negative impacts of increased tourism mobility?

Urban policymakers can successfully incorporate sustainable tourism mobility into urban mobility policy by using a thorough, cooperative strategy that tackles major obstacles and makes use of data-driven initiatives.
First and foremost, legislators need to be aware of the alleged and anticipated effects of unsustainable urban tourism mobility, such as congestion, pollution, and safety hazards. Comprehending these effects is essential in order to create focused actions that minimize adverse effects while optimizing financial gains.
Second, a multi-stakeholder strategy that encourages cooperation between both public and commercial sectors is necessary to close the gaps currently present in tourism and transportation planning. Closing the information gap and enhancing data accessibility would enable policymakers to create evidence-based policies that support sustainable mobility options while meeting the specific demands of tourists.
Thirdly, tourists can be nudged to select sustainable means of transportation by putting modal shift methods into practice through pricing incentives and personalised information.
By prioritising sustainable mobility options, enhancing data-driven decision-making, and encouraging collaboration among stakeholders, urban policymakers can create more liveable, inclusive, and environmentally sustainable cities while effectively mitigating the negative effects of increased tourism mobility.

Acknowledgements

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COMPARATIVE ANALYSES OF TOURISM IN REPUBLIC OF NORTH MACEDONIA AND REPUBLIC OF ALBANIA REPRESENTED THROUGH BUSINESS ANALYTICS' PHASES, DATA MINING AND VISUALIZATION TECHNIQUES, INFLUENCED BY INSTITUTIONS AND ECONOMIC DEVELOPMENT

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ABSTRACT

The unbreakable relationship and the abnormally large connection of the two developing countries and the mutual war they are waging on the road to European integration make the Republic of North Macedonia and the Republic of Albania an excellent opportunity for our research. Countries in transition have countless obstacles to overcome, and the tourism branch and the complexity associated with it, directly caused by not always functional institutions and their policies, are not an easy challenge to deal with. The methodology that the authors will use in this research will be based on the first 3 phases of business analytics, where the analysis of already existing historical data (descriptive phase) of the two countries in the past years will be visualized using Excel and Power BI. The second pillar of business analytics explains the reason and indicators for the existence of those numbers, and the third pillar expressed through linear regression will predict the possible future scenarios that would correspond to both countries. The purpose of this paper is to give a critical judgment about the work and efficiency of the key state institutions as well as their policies which are later reflected in the deviations in tourism and significantly increase/decrease the attractiveness of the country itself as a tourist destination that would be a potential target for foreign visitors. Last but not the least, the authors would like to put emphasis on the great importance of the experiences of all the Asecu participating countries that are very significant and helpful in the future development of our country.

Keywords: tourism, state institutions, business analytics, data mining and visualization technique

1. Introdutcion

What is tourism? This question can be answered starting from two perspectives, the first is an individual point of view, and the second looking with state eyes. Namely, tourism for the individual should mean an opportunity for change, for experiencing a new and different world, different from the one that is typical for him. Such an experience allows a person to expand his horizons, get out of the comfort zone and open up new opportunities and get to know new cultures. On the other hand, tourism has a completely different meaning from the perspective of the state. Namely, tourism can be considered as an important branch in the overall economy of a country. Tourism also plays a strong role in the development of the country, its progress can be a significant source of income for a country. That is why in the past years, tourism has been more and more valued and more and more investments are made at its expense all over the world.

In this paper, the authors will discuss the topic of tourism in two neighboring countries, the Republic of North Macedonia and the Republic of Albania, which are very similar to each other and deal with similar problems and challenges in reality. North Macedonia, as well as Albania, represent countries that can be experienced as a tourist paradise for several reasons, including the attractive destinations they offer, the natural treasures, affordable prices and the warmth of the peoples

who, in the role of hosts, are very hospitable and pleasant. All this, as well as many other reasons, have a positive effect on the observed growth in the number of foreign visitors and the expansion of tourism in the past years.

In our paper, the factors that have a direct impact on the tourism of North Macedonia and Albania are GDP per capita, number of homicides per capita, CO2 emissions per capita, net migration, road infrastructure, birth rate and death rate, inflation and additional factors. With simple and multiple regressions analysis we show the influence of these factors on the number of tourists in two countries mention above.

The study is organized as follows: following a brief introduction to the topic, the paper outlines the key concepts found in the global literature review in Section 2. It then proceeds with a detailed exploratory data analysis and describes the methodological approach employed. Section 4 presents the study's findings and offers key insights into the topic. Finally, a comprehensive conclusion is provided

2. Literature review

This section will explore additional studies related to or adjacent to our main question: the factors influencing the influx of international visitors in a country. Tourism has been identified as a major tool for the development of any country because it is a key role in developing it. (Aida Marku Ma, 2013). As one of the greatest sources for development, tourism is detected by many undeveloped and developing countries as the only way-out for economic prosperity (Biljana Petrevska, 2012). Many developing countries search for opportunities in development of different sectors. Among, very often is tourism that is seen as an option for increasing economy of the countries and their regions. (Ivanka Nestoroska, 2012).

The purpose of the study performed by Mihael Risteski and Ivanka Nestoroska is to present The Republic of North Macedonian tourism development in the past 3 decades who is characterized by oscillations caused as a result of different external and internal socio-economic and political conditions. Although the tourism development recorded a continuous increase in the analyzed time frame, the whole period was characterized by constant challenges, limitations and threats while at the same time the competition got higher. (2024 According to the State Statistical Office, from 2014 to 2018, The Republic of North Macedonian tourism has seen an increase in the number of arrivals and overnight stays from international tourists, which is a very positive

change compared to Kohl & Partner's (2016).

Albania has the appropriate potential for the development of this sector in all its specters such as coastal, mountainous, cultural, historic, curative etc. (Enkel Ceca, Christos Ladias, Antoneta Polo,2016). Albania is recognized as a tourism destination at the Mediterranean coast and has a competitive position in the international tourism market. (Aida Marku Ma, 2013). Through statistic data, we representedthe positive trend of the increase of this sector during 2000-2021. The number of tourists that visited Albania during this period has been increasing rapidly. The largest part of them are from South Europe (Enkel Ceca, Christos Ladias, Antoneta Polo,2016).

Our analysis is based on the already existing literature on this topic and our attempt is to achieve an upgrade and enrich those scientific data with our research that is mainly focused on comparisons between Albania and Macedonia, as well as the factors related to the development of tourism.

Based on this, we develop two distinct hypotheses:

H1: Institutional factors, such as government policies and regulations, significantly impact the tourism industry's growth and sustainability in Republic of North Macedonia and Republic of Albania.

H2: Differences in infrastructure and natural resources between Republic of North Macedonia and Republic of Albania contribute to variations in tourist preferences and visitation patterns.

3. Methodology approach
Exploring data characteristics (Comparison of Indicators Between The Republic of North Macedonian and Albania)

For this article, we chose to collect secondary data from May to July 2024. The data sources included global datasets from the World Bank, The World Data and the UN, as well as governmental portals in Albania and North Macedonia (State Statistical Office of the Republic of North Macedonia, n.d.; Statistical Office of the Republic of Albania, n.d)

The data that the authors will use in this research refer to the years from 2000 to 2021. Although we have data from earlier years, more precisely from the period of the 90s, that period is still quite dynamic and turbulent for this region of the world and therefore data associations may not have any logical explanation or meaning. It is important to note that a certain number of factors that could have an impact on the number of tourists in these

countries do not have adequate continuous measurement and there is not available the required amount of data. In the future, it would be good if countries and their institutions paid more attention to the statistical collection of data that would be useful in this type of research

In the following part we will comment some graphs with variables that will be used in regression models of our paper.

In the first graph (co2) the independent variable goes from a slight increase to a decrease in the interval from 2000-2003. Then we have a growing uptrend with visible oscillations until 2007. From 2007-2010 there is again a noticeable decline, to be followed by a sharp increase in 2011. From 2011-2016 there is a significant downward trend. From 2016-2020 there is a general increase in independent, with a noticeable decline in 2018.

Graph number 2 (Forest area %) from 2000-2007 has stagnation in the independent variable, then slight increases follow until 2010. From 2010 until 2016 there is a sharp increase, and from 2016 onwards there is a stagnant trend. On graph 3, we can see the movement of the variable that shows us renewable energy % by year. The variable is characterized by constant falls and rises throughout the entire period from 2000 to 2021

In graphs 4 and 5 the movement of the variable can be said to be quite similar to the movement of the time series, where we have a constant decline over the years with small not very significant increases. The variable death rate, which is represented in the 6th graph, has consistently had the same movement in these 20 years with a huge increase in 2020, of course, due to the corona crisis that was present around the world.

GDP per capita has a full upward trend in graph number 7, while the eighth graph has a downward trend until 2010 and a sharp upward trend until 2020.

In the following, we will review the movements of the time series for Albania shown in 8 graphs

The first graph presents the average values of the CO2 variable in Albania. From 2000 to 2004, we have a drastic increase, which records a decline in 2005. Over the next 15 years we have an all-time increase in this independent variable with some oscillations of decline in 2012, 2015 and from 2017 to 2020.

Foreign direct investment by year is represented in the following graph, which in the initial years has quite low values, but then we notice a considerable increase in them, which increase culminates somewhere in the middle of this time series, and then slightly decreases in the following years.

In the fifth graph, the independent variable shows a growing trend in 2000, followed by a significant

decline shortly after. In 2005, there was a slight increase, which was followed by another decrease, until 2009, when there was a significant increase, then it experienced a small decrease, and in 2015, a more significant decrease. Between 2015 and 2020 there is the lowest level of this variable with small insignificant increases.
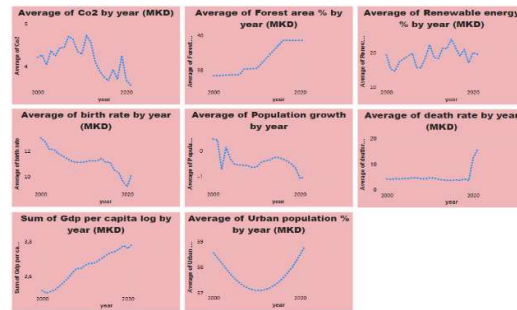
Graph 1. Comparative analysis of The Republic of North Macedonian indicators
Source: Authors' analysis (2000 – 2021

Graph 2. Comparative analysis of Albanian indicators
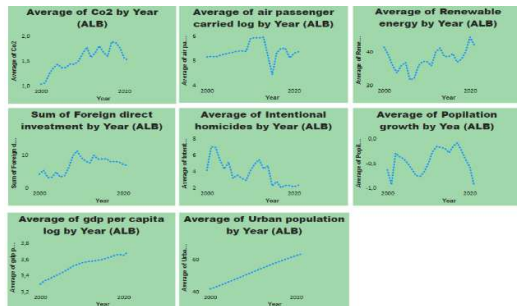
Source: Authors' analysis (2000 – 2021)

The logarithmic series of this graph which shows us the average of air passenger records growth in the first 10 years of the series and culminates somewhere in 2010/11 where it then follows a drastic path and ends with growth until 2020/21.

The renewable energy per year variable is represented on graph number 3. The movement of the series is rather growing with certain falls over the years that did not affect the downward trend of the variable.

The graph under number 6, on which the independent variable is presented, records a steep decline in 2002, which was immediately followed by a significant increase. From 2002 to 2008-2009 there is a decreasing trend, which from 2010 to 2020 is increasing with some reductions in 2015-2016. The last two graphs GDP per capita (log) and urban population by year are characterized by a constant growing trend in the years that are the goal

of the research.

3.1 Methodology

We conduct two different regression analyses through the excel data analysis. First, in order to select the independent variables that could have an impact on the number of tourist a simple linear regression is performed with each of the possible factors. Subsequently, we observe the coefficient of determination ($R2$) as an indicator of the explanatory power of each variable. The method used to estimate the linear regression model is the ordinary least squares (OLS) method. The linear regression model is defined as

$$Y = \beta0 + \beta1X + \varepsilon$$

where Y is the dependent variable i.e., infant mortality rate in our case, X is the independent variable, while $\beta0$ and $\beta1$ are intercept and slope parameters to be estimated. With ε we denote the residual variability in the model.

Second, we conduct a multiple linear regression model to find the strongest relationships between a combination of factors and the number of tourist rates. Simple transformations of variables were applied to the most significant regression models to meet the theoretical assumptions for regression of cross-sectional data. The models were selected by comparing several statistical indicators: the statistical significance of each coefficient separately, the statistical significance of the model (F-statistic), the coefficient of determination ($R2$) and the adjusted $R2$ for comparison between models with different number of variables). The general form of the models that showed the best compromise between their fit and complexity is

$$Y = \beta0 + \beta1X + \beta2X2 + \cdots + \beta iXi + \varepsilon$$
Or
$$Y = \beta0 + \sum \beta iXi \; i=1 \; + \varepsilon$$

The slope coefficients indicate a linear relationship at a marginal change in the corresponding independent variable, all else being equal. By transforming into their logarithm form, all variables in a given model, we explore a relationship in which the effect of each variable on the outcome is proportional to its natural logarithm.

4. Analysis of results

4.1 Analyzing the Impact of indicators on number of tourists in The Republic of North Macedonian and Albania (Simple linear regressions)

In our initial phase, we conducted separate regression analyses for Albania and The Republic of North Macedonian to assess the assumptions for modeling cross-sectional data and the explanatory strength of each variable, as indicated by the $R2$ values in the models. Our findings revealed that the majority of associations between independent and dependent variables exhibit homoscedasticity. Specifically, out of thirteen samples, eleven demonstrated homoscedasticity.

Instances of heteroscedasticity were observed in analyses involving the independent variables: Agricultural land % and Intentional homicides in Albania. Notably, The Republic of North Macedonian did not exhibit any variables with heteroscedasticity.

Hence, medium/high correlations between two Independents in The Republic of North Macedonian that we should consider are about two, that is, the correlation between number of tourists and Internet users which is 0.52; the correlation of 0.54 between number of tourists and GDP per capita. In our analysis there were more independents, but we stuck to the two above, because they are with highest variability. Furthermore, we obtained the coefficient of determination ($R2$) for each regression, i.e. we found out which of the independent variables explain our dependent variable the best. We found that birth rate with 22%, road infrastructure with 17%, Intentional homicides with 32% and Forest area with 49%.

Table 1. Results of the Simple linear regression analysis for The Republic of North Macedonian

Albania single regressions (number of tourists, the dependent variable - Y	Intercept	Coefficient	R-square	Heteroskedasticity	Significance F	P-value
Co2	3,7605	1,6486	0,8084	Homoscedastic	0,0000	0,000
Net migration	11,6693	-1,2316	0,8814	Homoscedastic	0,0000	0,000
Urban population	3,1041	0,0601	0,9123	Homoscedastic	0,0000	0,000
Intentional homicides	6,9867	-0,1874	0,4363	Heteroskedastic	0,0013	0,0013
GDP per capita	-6,372	3,5870	0,9564	Homoscedastic	0,0000	0,0003

Source: Authors' analysis (2000 – 2021)

On the other hand, the correlations between the independents in Albania that we will analyze shown through the coefficient of determination ($R2$) for each regression will help to find out which of the independent variables best explain our dependent variable. Independents with a significantly high R2 for this country are Co2 with 80%, Net migration with 88%, Urban population with 91%, Intentional homicides with 43% and GDP per capita 95%

Table 2. Results of the Simple linear regression analysis for Albania

Macedonia single regressions (number of tourists, the dependent variable - Y	Intercept	Coefficient	R-square	Heteroskedasticity	Significance F	P-value
Birth rate	6,9269	-0,1323	0,2204	Homoscedastic	0,0274	0,0274
Road Infrastructure	5,2973	0,0463	0,1763	Homoscedastic	0,0051	0,0051
internet users %	5,1026	0,0068	0,5157	Homoscedastic	0,000	0,000
Intentional homicides	5,8607	-0,2216	0,3294	Homoscedastic	0,0051	0,0051
Forest area	-2,4605	0,2049	0,4945	Homoscedastic	0,0002	0,0002
Gdp per capita	-1,7507	1,9713	0,5402	Homoscedastic	0,000	0,000

Source: Authors' analysis (2000 – 2021)

4.2 Analyzing the Impact of indicators on number of tourists in The Republic of North Macedonian and Albania (Multiple linear regressions)

After conducting the multiple linear analysis, about 50% of the variability of the number of tourists in The Republic of North Macedonian is explained by birth rate and death rate. The linear association is represented by the coefficients of the corresponding (explanatory) variables ceteris paribus: for each point increase in birth rate, number of tourists decrease by -0,2133% and for every point of increase in death rate number of tourist decrease by -0,0516.

Model number 2 show us multiple linear regression with variability of 67% of the number of tourist in country mention above and this model is explained by Co2, forest area and renewable energy%. For each point increase in Co2, number of tourists increase by 0,4084%, for every point of increase in Forest area (%) number of tourist increase by 0,2831% and for every point increase in renewable energy number of tourist increase by 0,0321 %.

Model number 3 show us multiple linear regression with variability of 66% of the number of tourist in country mention above and this model is explained by GDP per capita and population growth. For each % point increase in GDP per capita, number of tourists increase by 2,6284 and for every point of increase in population growth number of tourist increase by 0,2860%. The last model that has also high % of variability can be seen and analyzed by the readers in the table given on this page point increase in urban population number of tourists increase by 0,0520% and for every point of increase in foreign direct investment number of tourist increase by 0,0369%.

In this part of the analysis of the results, the multiple regressions for the Republic of Albania will be commented, one of the regressions are with 3 independent variables while we have three with 2 independent variables.Triple model will be explained with more details, and the two-variable models can be seen in the table showing the significant regression pieces.

Table 3. Results of the multiple linear regression analysis for The Republic of North Macedonian (left), Albania (right)

	Model 1	Model 2	Model 3	Model 4
Intercept	8,0959*** (0,6241)	-7,7880*** (2,6094)	-4,0276** (1,5534)	7,5599* (3,7466)
birth rate	-0,2133*** (0,0518)			
death rate	-0,0516*** (0,0157)			
Co2		0,4084*** (0,1405)		
Forest area		0,2831*** (0,0575)		
Renewable energy %		0,0321* (0,0169)		
GDP per capita			2,6284*** (0,4324)	
Population growth			0,2860** (0,1070)	
Urban population %				-0,1893*** (0,0646)
Forest area %				0,2283*** (0,0402)
Included Obs.	22	22	20	22
R-squared	0,50211	0,6718	0,6658	0,6516
Adjusted R-squared	0,4497	0,6172	0,6306	0,6149
S.E. of regression	0,1860	0,1551	0,1524	0,1556

Note: *,**,*** indicate statistical significance at the 10%, 5%, and 1% respectively, based on the conducted t-test.

Source: Authors' analysis (2000 – 2021)

The first model with two independents in it shows us a multiple regression analysis also with a high variability of 94% which is composed of urban population and foreign direct investment.

The second model with three independents in it shows us a multiple regression analysis also with a high variability of 90% which is composed of Co2, population growth and renewable energy. For each point increase in Co2, number of tourists increase by 1,8080%, for every point of increase in population growth number of tourist decrease by -0,3135% and for each point increase in renewable energy number od tourist decrease by 0,57477. The other two models that have also high % of variability can be seen and analyzed by the readers in the table given on the previous page.

5. Disscusion and recommendations

In this part of our research, the authors will comment on the results they obtained by processing the data, what they mean and explain them, what are the limitations we faced when writing this paper and short suggestions on how to further improve the analyzes of this type and papers that deal with a similar topic to this one.

From the obtained results we can really confirm

that the above two hypotheses are mostly accepted and proven by this research and analysis.We will observe the acceptance of the hypotheses through the strong relationships of the combined regressions with multiple variables in proportion to the number of tourists, as well as the individual independent ones that are also influential on tourism, but with less variability than the multiple regressions. We can see these results in the tables above in this paper.

The government policies that are implemented by the institutions are largely handled by the

	Model 1	Model 2	Model 3	Model 4
Intercept	3,2744*** (0,1969)	2,0160*** (0,4683)	-5,6648*** (0,4760)	4,8910*** (1,0510)
Urban population	0,0520*** (0,0045)			
Foreign direct investment	0,0369*** (0,0126)			
Co2		1,8080*** (0,1725)		
Popilation growth		-0,3135* (0,1570)		
Renewable energy		0,0360*** (0,0100)		
Gdp per capita			3,4193*** (0,1325)	
Popilation growth			0,2549*** (0,0605)	
air passenger carried log				0,4013* (0,1981)
Intentional homicides				-0,20175*** (0,0448)
Included Obs.	22	22	22	22
R-squared	0,9395	0,9023	0,9774	0,8772
Adjusted R-squared	0,9331	0,8860	0,9750	0,8567
S.E. of regression	0,1099	0,1435	0,0671	2,4574

Note: *, **, *** indicate statistical significance at the 10%, 5%, and 1% respectively, based on the conducted t-test.

independent variables that we put in our regressions. Variables such as foreign direct investment, gdp per capita, renewable energy, urban population are only part of the independent ones that depend on the work of the state itself and the proper operation of the state institutions, so that further all this affects whether in both countries will decrease or increase the number of tourists in their territory.

As an example of a government policy that really contributed to a change in the number of tourists from a positive aspect, it must be noted that the SKOPJE 2014 project brought a really large number of visitors to the capital, and the country itself, who showed interest in this country. Although this project left a negative impression on a large part of the Macedonian people, the reality is really positive and the benefits were and still are obvious.

Albania, on the other hand, has been following correct policies for years, which constantly increases the number of foreign visitors to their country. Sea ownership is also quite a large factor that can influence this dependent variable, but we know of course that it cannot be quantified and used in the analysis models.

The limitations in this research were of course the data bases for these two neighboring countries, which are rather incomplete or partially filled. This and that makes it difficult for the researchers to fulfill their intended goal and to confirm the hypotheses they want to prove. When searching for data, we encountered variables that can have a strong impact on tourism, but due to the lack of adequate data, they could not be used in this research.

The recommendations are exactly aimed at this part in relation to the data itself. Countries should be more involved in measuring and quantifying the potential variables that affect the development of tourism. Continually check and update their statistical bases, so that they can have insight into what things need to be improved and change certain policies and approaches if it is really necessary. If this is improved at least a little, then potential researchers on this topic will have a much easier job of proving their knowledge and assumptions.

In future research authors can be focused on impact of digital tourism, Sustainability and Ecotourism, Comparative Analysis with Neighboring Countries, Impact of Cultural Heritage and Events, Role of Stakeholder Collaboration. Each direction offers opportunities to delve deeper into specific aspects of tourism management, policy formulation, and strategic planning to support sustainable and resilient tourism sectors in both countries.

6. Conclusion

In conclusion, our comparative analysis of tourism in the Republic of North Macedonia and the Republic of Albania, utilizing business analytics phases, data mining, and visualization techniques, underscored the significant influence of institutional frameworks and economic development on the tourism sectors of both countries.

The purpose of our research endeavor was to see the complex relationship between the number of tourists in the neighboring countries of The Republic of North Macedonian and Albania and the factors that would potentially affect the development of tourism, which are the product of the work of the state and its institutions, as well as the natural factors and location of the states. We find that there are more positive relationships and more variability when the variables themselves are

correlated in the multiple regression than when we calculate them individually.

The researched hypotheses are proven to be accepted by examining the strong relationships in the combined regressions with multiple variables relative to the number of tourists. Additionally, the impact of individual independent variables on tourism is also considered, noting that these have less variability compared to the multiple regressions.

Our findings suggest strategic opportunities for policymakers and stakeholders to improve tourism competitiveness through targeted investment, regulatory reform, and exploitation of cultural and natural assets. By fostering an enabling environment for tourism development aligned with sustainable practices and economic growth, Macedonia and Albania can further capitalize on their unique strengths and achieve long-term prosperity in the global tourism market.

However, we must agree that research on this issue is still insufficiently researched and that in the future more focus can be placed on this type of published work. Continued research and analysis will be essential to monitor progress, adjust strategies and ensure that tourism contributes positively to broader economic development goals in both nations.

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ID: 011

ECO-INNOVATIONS: A LITERATURE REVIEW

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ABSTRACT

Pollution, greenhouse gas emissions, and waste management are among the major issues facing the environment. Aiming at reducing their ecological footprint, organizations have oriented their strategies towards a regenerative economy and eco-innovations, which present a new business approach promoting sustainability throughout the entire life cycle of a product. Stakeholder theory and the resource-based approach are two other important concepts for understanding eco-innovation. This paper aims to investigate eco-innovations as a new business approach. The paper also explores the best practices that guarantee the company a competitive advantage, profit, a smaller ecological footprint, and a better human life. The paper synthesizes the findings from the reviewed literature and finally, the conclusions are drawn.

Keywords: eco-innovation, natural resource-based perspective, strategy, performance, cleaner production, stakeholder theory

JEL Classification numbers: Q01, Q55, Q56

1. Introduction

Environmental damage caused by pollution, greenhouse gas emissions, and poor waste management poses very significant threats to global sustainability. The preservation of environmental quality is now crucial due to the growing population and limited resources (Govindan et al., 2015). In response to this problem, organizations are increasingly adopting eco-innovation strategies that support a regenerative economy. This paper investigates eco-innovations as a modern business approach that uses sustainability throughout the product life cycle, focusing on the stakeholder theory and the resource-based approach. I will explain some of the best practices that enable companies to achieve competitive advantage, profitability, and reduced ecological footprint, contributing to improved overall life quality.

1. Methodology

The methodology used in this paper is desk research that reviews the existing literature such as peer-reviewed journals, industry reports, and case studies to gather relevant data and insights. This paper combines findings from the literature review on eco-innovations, stakeholder theory, and the resource-based approach. The research includes an analysis of case studies and data from different businesses to identify the best practices and the key success factors.

2. Theoretical Frameworks

2.1 Eco-Innovation

Eco-innovation is the production and use of a product, process, service, management, or business methods that are new to the firm and which, throughout their life cycle, lead to a reduction of environmental risk, pollution, and other negative impacts of resource use (including energy use) compared to relevant traditional alternatives (Kemp & Pearson, 2007).

2.2 Stakeholder Theory

Stakeholder theory suggests that companies should consider the interests of all stakeholders (employees, customers, suppliers, etc.), also their influence in the decision-making processes (Freeman, 1984). This approach includes more responsible and ethical business models. It makes the processes engaging with stakeholders more important and helps to understand their needs and expectations, which can lead to more sustainable and innovative practices.

2.3 Resource-Based Approach

The resource-based approach is focused on using an organization's unique resources as leverage to achieve sustainable and eco-friendly competitive advantage (Barney, 1991). This perspective

suggests that the strategic use of technological assets, innovative culture, and sustainable practices, is the most important part of eco-innovation. Companies that can effectively and efficiently use these resources can develop unique skills that differentiate them from their competitors.

2.5 Eco-innovation Index

Eco-innovation is a crucial part of the EU Green Deal. To achieve the objective of the European Green Deal, which is to move toward a sustainable and carbon-neutral economy, eco-innovation is essential (European Environment Agency, 2023).
 The index is based on five dimensions: *eco-innovation inputs, eco-innovation activities, eco-innovation outputs, resource efficiency outcomes, and socio-economic outcomes. Performance in each of these dimensions is measured using relevant indicators, published by, for instance, Eurostat, the EEA, and the Organization for Economic Co-operation and Development (OECD).* (European Environment Agency, 2023).
 As shown in Figure 1, due to resources being efficiently used, as a result of the eco-innovations, the EU Commission eco-innovation index has seen a massive increase from 2013 to 2022.
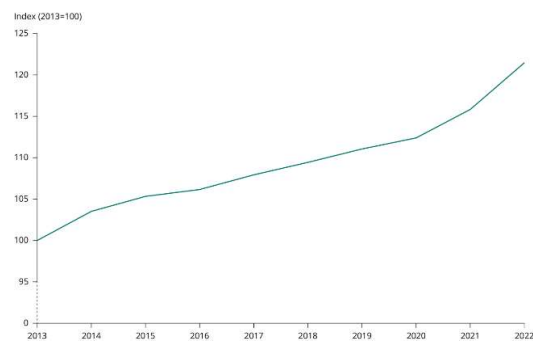

Figure 1. Eco-innovation index, EU-27, 2013-2022 (EU-27 referring to 27 different countries of Europe)
Source: European Environment Agency (2023)

According to the EU Member States' respective eco-innovation performance in 2013 and 2022, the Nordic region, Luxembourg, and Austria fared the best. Except for Finland, each of these nations fared well in terms of resource efficiency results (European Environment Agency, 2023). Based on the European Environment Agency (2023) Austria, Finland, and Luxembourg have especially high socioeconomic outcome scores (figure 2).
From 2013 to 2022, all EU Member States' index

scores increased, except Romania. (European Environment Agency, 2023). The increase in index scores differed based on numerous economic reasons. For example, 18 EU members saw rises that were higher than the average for the EU-27 (European Environment Agency, 2023). Greece saw the biggest increase, followed by Lithuania, Austria, Ireland, Bulgaria, and Germany, and that improved performance was mostly attributable to higher government spending and appropriations for environmental and energy-related R&D (European Environment Agency, 2023). Lithuania, Austria, Ireland, Bulgaria, and Germany have experienced relatively high increases in GDP, which can be attributed to improvements in several resource efficiency-related measures (European Environment Agency, 2023).
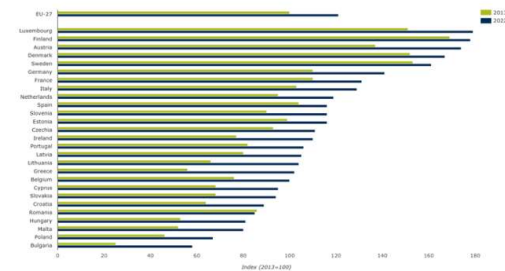
Figure 2. Eco-innovation index by EU Member State, 2013-2022 (relative to EU-27=100 in 2013)

Source: European Environment Agency (2023)

3. Findings and Discussion

3.1 Best Practices in Eco-Innovation

Based on the literature review, this part presents the best practices for adapting eco-innovations, that enable companies to achieve competitive advantage over their competition in the market, higher profitability, reduced ecological footprint, and thus contributing to improved overall life quality. In addition, the analysis of few case studies that have successfully adapted eco-innovations are presented.
Integration of Sustainability into Core Strategy is when a company includes sustainability into its plan, it means the management of the company thinks about how its actions affect people, the planet, and profits each step of the way. They set goals to reduce pollution from carbon emissions and ensure everything they buy is obtained fairly without harming others or nature. Additionally, they work hard to welcome all kinds of people and spread awareness about caring for our world within their team.
Companies that adopt sustainability into their business strategy tend to perform better

environmentally and economically. For example, the Climeworks Direct Air Capture helps remove tons of CO2 from the atmosphere (Climeworks, 2024). Adapting sustainability ensures that environmental goals are aligned with business objectives, leading to clearer and more effective initiatives (Climework, 2024).

Working with different stakeholders, including suppliers, customers, and research institutions, enhances the innovation process in the company. The partnership between Volocopter and the government in developing advanced transport technologies shows the benefits of collaborative innovation (Web-3). This process allows companies to share their resources, and knowledge to speed up the development and deployment of sustainable technologies.

3.2 Lifecycle Assessment and Circular Economy

Implementing lifecycle assessment (LCA) and circular economy principles helps in designing products that minimize waste and maximize resource efficiency. Companies like IKEA have adopted circular design principles, promoting product longevity and recyclability (IKEA, 2024). Lifecycle assessment provides a new and including view of the environmental impacts associated with a product, leading to more sustainable design and production choices.

3.3 Performance Outcomes

Studies show that eco-innovative companies often achieve higher financial performance, market differentiation, and regulatory compliance. A meta-analysis by Ghisetti and Rennings (2014) found that eco-innovation positively impacts both: environmental and economic performance. More recent research by Öner and Bayrak (2024) highlights the role of green supply chain management in improving both environmental and financial outcomes in the fast-food industry.

4. Case Studies

4.1 Climeworks

Climeworks leads the carbon removal industry using their direct air capture technology (DAC) which removes unavoidable and historic emissions from the air, they were named one of the most innovative companies by Fast Company in 2024. Now they have introduced a new technology named Generation 3 which focuses on the need to approach more carbon removal methods. The DAC

has been proven to be effective having removed thousands of tons of carbon dioxide in Iceland where it is collected from the air, separated with chemical reactions and stored safely underground, and ensured for 10,000 years, and now businesses have integrated their system , one of the biggest and most important contracts being with BCG (Boston Consulting Group) projected to remove over 80,000 tons of CO2 (Climeworks, 2024).

4.1.1. Tesla

Tesla focuses on building products that replace major pollutants. In 2023, Tesla customers avoided emitting over 20 million metric tons of carbon dioxide. Their products are ecologically superior to traditional fossil-fueled products. Tesla tries to minimize mining, responsibly sources their materials, and ensures their products are efficient and effective, while their factories aim for carbon neutrality showcased by their plant in Berlin which uses 100% renewable electricity. The batteries in the EV's degrade only 15% after 200,000 miles (about 321868.8 km) and at the same time have comparably lower costs than conventional vehicles. They also offer renewable energy solutions like solar panels, roofs, and their innovative Powerwall which serves as a battery to store the energy taken from the solar panels (Tesla, 2024).

4.2 Volocopter

Volocopter is a company focusing on eco-friendly transportation, particularly on aircraft and helicopters. These vehicles are electric and showcase the company's innovative technology and commitment to being ecologically sustainable, designed for cities aiming to provide quick connections within urban areas. Their operating system called VoloIQ manages the operation of the vehicle including maintenance, scheduling, coordination, safety protocols, and data analysis of the flights for continuous improvement. They also have collaborations with the government and industry, strengthening their position in the green transport market. It is expected that this technology will start being used this year (Volocopter, 2023).

5. Conclusion

Eco-innovation represents new business models for achieving sustainability and competitive advantage in the modern economy. Innovative solutions are a must to address the expanding environmental concerns. As a result, firms are adopting eco-innovations to ensure sustainability across the

product life cycle. This study examines eco-innovations and shows how their adoption can result in firms that are profitable, competitive, and have less environmental impact. By integrating sustainability into core strategies, encouraging collaborative innovation, and adopting lifecycle and circular economy principles, companies can significantly reduce their ecological footprint while improving their performance. It is in line with the Stakeholder Theory, which promotes more moral and sustainable business models by taking in the consideration the benefits of all stakeholders during decision-making processes.

The Resource-Based Approach emphasizes the use of firm's culture driven by innovations and sustainable practices to help a business utilize its unique resources and establish a sustained competitive edge.

6. Future directions and implications

6.1 Future Directions

Eco-innovation is definitely going to become increasingly important as we face global environmental challenges. Future research should focus on the following points:

- **Technological Advancements**: The use of new technologies that can reduce the environmental impact of pollutants mainly focusing on greenhouse gases and enhancing sustainability.
- **Policy and Regulation**: The role of government policies and regulations should be analyzed in promoting eco-innovation and sustainable practices.
- **Consumer Behavior**: Investigating how consumer preferences and behavior influence the use of eco-innovations.

6.2 Recommendations for Business and Policy

The findings of this paper suggest some recommendations for businesses and governments:

- **Businesses**: Companies should use sustainability as a part of their core strategies, accelerate collaborative innovation, and adopt lifecycle assessment and circular economy principles to enhance their environmental and economic performance.
- **Governments**: Governments should create supportive regulatory frameworks that encourage businesses to invest in eco-innovation. Policies that promote transparency, accountability, and stakeholder engagement can drive more sustainable business practices.

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Students Presentation session 3

ID: 012

ADAPTING TO THE CLIMATE VARIABILITY; STRATEGIES FOR TOURISM

Georgios Chatzineiros

ABSTRACT

The tourism industry has always been facing a variety of challenges. Amongst all of them, the research area of focus is the climate change (Hall, 2016). The consequences, which are proceeded from the climate change, concern the social, environmental and economic tourism sector with the latter being affected the most from the environmental shifts. A successful adaptation depends upon technological development, institutional frameworks, vulnerability to climate change and the availability of financing, the provision of information and strategies exchange at an international level. Continuing with that, from destination to destination, it is mandatory to adjust the different scales that adaptations have. This depends on the visible effects the climate change of a state has (Simpson et al., 2008). Austria and China, which are the two countries that are being examined on this paper, seem to get really well with the adaption to the climate variability. Each one of them has different suggestions to face the climate change and that is very encouraging, considering that they are two completely different – divided by several other countries – countries in many aspects.

Keywords

Climate, Strategies, Tourism, Variability

1. Introduction

 The tourism industry, even if it has been evolved into one of the most prospering sectors in the global economy, has consistently encountered a range of challenges. Amongst all of them, the research area of focus is the climate change, which is caused by human activity that alters the composition of the global atmosphere and is observed over comparable time periods (Hall, 2016). Meanwhile, it is a significant hurdle for the tourism, as it has numerous and profound consequences (Buckley, 2008). The climate variability has elicited extreme weather events and phenomena, throughout the years. These bizarre phenomena jeopardize, generally, the tourism industry and the destinations by causing damages to infrastructure, attractions and at the same time putting the tourists' or residents' lives at risk (Wang et al., 2024).

 With the help of plentiful researchers and experts, the latter are currently trying to design and execute new strategies, more specifically, mitigation and adaptation strategies. Both should be adapted at each location differently. The mitigation strategies are strategies with the aim of reduction or prevention of the impacts, caused by the climate shift. These strategies can contribute also, on the counterbalance of some of the inevitable negative effects. On the other hand, adaptation strategies are those, who aim to adjust (the tourism) to the unprecedented conditions, which have been caused by the climate change. Furthermore, they focus on diminishing the vulnerability of the climates variability consequences and boosting the resilience on a specific location (Dogru et al., 2019). On this paper, I will focus on the adaptation strategies.

2. Literature review

To create this paper, it was used a composition of many scientific reports, mainly taken from journals, which are globally recognized and correlated to the subject that is being examined. More specifically, the newest study that was examined was a case study, which took place in Xinjiang, China and is entitled as: "Assessment of tourism socio-ecological system resilience in arid areas". This study was published in the journal; "Ecological Indicators" on February 2024. The following newest studies are: "High temperatures and tourism: Findings from China" in 2023, also "Climate risk perception and adaptation of tourism sector in China" in 2022 and "Actor-network theory and organizational resilience to climate change in community-based tourism", published on "Journal of Outdoor Recreation and Tourism" published on June 2022.

3. Data and methodology

Most of the studies I used were found via Science Direct, a very famous, reputable and globally accessible database, where numerous researchers' works have been published throughout the years.

Entering mostly via my computer and sometimes via my mobile phone, typing on Science Direct some – associated with the presented subject – words, which are cited below, and finally studying carefully all the depicted studies, I understood the information that would have been helpful, convenient and useful to use and show to, I finally wrote and combined them down to a paper and then conveyed them digitally to Microsoft Word.

Words that helped me found the relevant papers were; adaption, climate, change, strategies, tourism, vulnerability.

The covered period of this paper is from 2013 to 2024. The period that has been selected is the above mentioned in order to present the most recent data from the published research. Moreover, because of the pandemic of Covid-19 in 2020, it is more indicative to include the period of the contamination of the flu, when it comes to the data of the tourism industry. Moving to the covered regions, there was not a specific focus on a continent or a destination from the start and I was navigated by the articles I found. The sure thing is that I wanted to search for two countries that were geographically far away from each other.

The difficulties of this paper were a few. It was hard to identify the information that I was needed and the articles had a lot of terminology – undoubtedly reasonable for a science article – which I wasn't aware of; However, I took the time to search and select carefully the most relevant studies according to my subject, understand the terminology that was used and express the terminology on this paper with simple words.

4. Results and discussion

As I said on the Introduction, adaptation strategies are those, who aim to adjust the tourism to the unprecedented conditions caused by the climate change. Talking about the most well – known adaptation strategies all around the world, these are; promoting off- season tourism by means of weather independent attractions and events, for example cultural events, and at the same time, fostering the not so affected by climate variability destinations, upgrading tourism infrastructure to achieve a better protection – resistance of extreme events such as weather – resistant buildings, promoting eco – tourism and agro – tourism by developing activities that contribute to interacting, connection with nature and learning about agriculture. Furthermore, by investing and progressing on predictive modeling in order to facilitate decision – making or by inventing financial mechanisms to support the adaptation of tourists businesses for instance loans' decline or grants (Balbi et al., 2013).

One of the countries I searched for was Austria. As it can be seen, the climate change has numerous negative effects on temperature, precipitation, water balance and presents extreme weather events. So Austria decided to follow an aggressive strategy (Pröbstl-Haider et al., 2021).

Austria is also known for its attractiveness, firstly, because it is located in the centre of the Europe, and secondly, due to the world – wide recognition it has or due to the organized heritage special events, for example the Jazz Fest Wien. According to Jiricka – Purrer et al. (2020), Austrian cities, which depend on location and topography, extreme climate phenomena such as heavy rainfall events, storms and heat waves, could increasingly influence negatively the tourism context. Interestingly, as it has been examined, heat waves can have less influence in a travel destination than bad weather and cold spells. But that was not a problem for Austrian tourists in 2010, as they adapted quickly their sightseeing programs, making more and longer breaks and seeking out more cold places.

Apropos of the knock – on effects due to climate change in Austria;
- Mobility, lack of environmental friendly travel options.
- Outdoor and activities both in the winter and the summer, since Austria is a winter and summer destination by reason for a limitation of snow – making or a decrease in permafrost or to the wind changes and thermals.
- An increase in harmful insects, allergenic plants & health problems, caused of the extreme heat.
- Possible restriction of food supply as a consequence of crop failures and cost increases as a result of mandatory imports from other countries (Pröbstl-Haider et al., 2021).

The following presented researchers' vision was also called as "Tourism following the Paris lifestyle", which was influenced by an alternative lifestyle on a vacation, which aims to hit the climate targets agreed on in Paris in 2015.

Some of the Austrian adaption strategies for the design of summer tourism offers in city tourism were;
- The perseverance or the enhancement of green spaces and the exploration of their diverse uses, the creation of water – related structures in public spaces (water resistant or artificial lakes)
- The creation and the maintenance on new offers of water-based sports and recreational activities (mountain climbing, kayaking, skiing, cycling)

- Water and eco – based mobility (Jiricka – Purrer et al., 2020).
- It is also important for the city's infrastructure to be equipped with cooling systems, drinking fountains, water playground and, generally speaking, several other measures related to water – induced cooling effects.

Table 1: Adaptation Strategies in Austria (all year)

By informing each other about climate protection, for example, the means of transport and the dangers – consequences of our actions (Pröbstl-Haider et al., 2021).
By understanding travelers' decisions, what lead to a tourists' choice – internal perception or external information, external factors - and how their choices influence positively or negatively the social environment or the destination (Pröbstl-Haider et al., 2021).
By promoting, influencing certain environmentally friendly or energy-saving tourists' measures during their vacations or creating new concepts that integrate research results from psychology, economics and consumer behavior research with the aim of achieving behavioral changes (Pröbstl-Haider et al., 2021).
By investing snow – making technologies to maintain the interest in winter activities. This is mandatory now for Austria, due to the big number of the mountains it has and due to the climate change effects (Pröbstl-Haider et al., 2021).

Table 2: Adaptation Strategies in China (all year)

Investing and promoting famous cultural and historical sites, which are possible to be visited all year independently of the weather conditions (Yu et al., 2023).
By making a point of renewable energy sources for tourism infrastructure to promote sustainable tourism and reduce carbon emissions (Hu et at., 2022).
National parks as Juizhaigou and Zhangjiajie are being promoted and so eco – tourism (Hu et al., 2022).
By promoting and encouraging electric vehicles and banning dangerous for the planet materials – substances, such as single – use plastics (Yu et al., 2023).
Promoting cultural tourism to detach the attention from the climate vulnerability (Yu et al., 2023).

The second country I decided to study for this paper is China. Investigating the study, I realized that the Asian country had different knock – on effects in comparison to the previous ones in Austria. More specifically;

- Extreme meteorological phenomena with the most known ones; the heavy rain and the flood, being followed by snow, heatwaves and extreme storm events.
- When respondents were asked about the negative impact of climate change in general and in relation to specific aspects of the tourism system, they answered that the most impactful consequence was the reduce on infrastructure and resources (Hu et at., 2022).
- High temperature influences tourists' travel willingness and spatial behavior with an increasing inclination towards heat escape among tourists.
- Noteworthy decline also on touristic cities, such as Beijing (Yu et al., 2023).

5. Conclusion

Climate change has introduced numerous obstacles to tourism. The alarm bell has been hit for all the countries of the world, especially the ones who are being strengthened or supported financially from the tourism. Some countries are adapting better to climate variability, while others are falling a little behind. The two countries of this paper, Austria and China, are two of the well adapted – on climate change – countries that, to my perspective, can be considered as models of the innovation and the development of the adaptation strategies.

Austria's approach is multifaceted and this can only be calculated as a good thing. From weather – independent attractions to infrastructure variability and updates, the promotion of eco – tourism and more specifically green spaces or (the creation of) water – related structures, also the furtherance of water sports and other nature based activities, and the – impossible to not to be referred – investment of snow – making technologies design, Austria seems to maintaining its attractiveness while lessening the devastating impacts of the climate change.

The same can be said to China, which is on the other side of the world. What we can conclude from that and which is very inspirational is that no matter the geographical region of a country, it is possible for each one of them to become more and more developed on the section. Alternatively, China promotes renewable energies in tourism infrastructures and in parallel sustainable practices. The Asian country also embraces its cultural heritage and history by focusing on places that can be visited all year. All these actions seem to lead on fostering environmental vulnerability and responsibility, alongside with dwindling people environmentally apathy.

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E-LEARNING EVOLUTION: TRENDS AND INNOVATIONS IN MOOCS

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Abstract

The electronic learning (E-Learning) considered as computer assisted learning has been around since the 1960s but its adoption and popularization mainly started after the popularization of the internet and the web. Since its introduction till present days the e-learning rapidly evolved regarding the technology and the e-learning methods/tools used. Having in mind that it has many benefits for the teacher from one side and the learners on the other, the e-learning found its application in education, business and the military or wherever is needed. The purpose of this paper is to outline, examine and discuss the evolution, the current state and the new trends in e-learning. The research showed that there is abundance of available technology and e-learning tools that foster and support the learning process. It is evident that e-learning is widely used in education and business and it is expected to grow further. On the other hand there is insufficient evidence of the particular effectiveness of the various pedagogical methodologies used for e-learning. Current state in e-learning and prevailing new trends form the foundations for future direction and development of this field for educational and training purposes. These trends include but are not limited to: blended learning, micro-learning, personalized learning, Massive Open Online Courses, etc.

Keywords: E-learning, Learning Management Systems, Education, Training, Distance Learning, Massive Open Online Courses;

1.Introduction

What are MOOCs? Massive Open Online Courses (MOOCs) have emerged as a transformative force in the field of education, disrupting traditional learning models and expanding access to knowledge on a global scale. Since their inception, MOOCs have provided millions of learners with the opportunity to engage with high-quality educational content from prestigious institutions, often at little to no cost. The rapid adoption of MOOCs has been driven by the convergence of technological advancements, increasing demand for flexible learning options, and a growing recognition of the need for lifelong learning in a rapidly changing world.

This paper explores the development, impact, and future prospects of MOOCs. It examines how these platforms have evolved over the past decade, the pedagogical innovations they have introduced, and the challenges they face in terms of learner engagement, completion rates, and quality assurance. By analyzing the role of MOOCs in democratizing education and fostering inclusive learning environments, this paper aims to provide a comprehensive understanding of their potential to reshape the educational landscape in the digital age.

As MOOCs continue to evolve, their influence extends beyond merely providing access to courses; they are reshaping the very concept of education. These platforms have enabled a more personalized and self-directed learning experience, allowing individuals to tailor their education to their specific needs and interests. MOOCs have also facilitated the growth of global learning communities, where learners from diverse backgrounds collaborate and exchange knowledge. However, the widespread adoption of MOOCs has also brought to light several critical challenges, including issues of digital equity, the need for robust assessment methods, and the sustainability of free access models. Addressing these challenges is crucial for maximizing the potential of MOOCs to contribute meaningfully to global education and workforce development.

Education system has undergone dramatic change since pre-historic times. Among all the technological based innovations taken place in higher education, Massive Open Online Courses (MOOCs) are considered as one of the most attention seeking development all over the globe in the present times. It's been established that Massive Open Online Courses (MOOC) were originated as

a result of Skype chat between two Canadian Educators.

MOOCs have completely transformed the face of Higher Education and have largely impacted the way online teaching and learning is imparted to students and learners. The present study will mainly look into the current trends and development of MOOCs; their features; benefits and limitations. MOOC platforms/aggregators in India and abroad have also been discussed.

2.Literature Review

MOOCs have been in eLearning business for a while now but whether they are as effective as face-to-face pedagogy and how MOOC affordances such as interactive exercises, social networks, and rich multimedia content can be harnessed in face-to-face education are some of the questions that have intrigued many of the researchers recently.

To understand the effectiveness of MOOCs, which is measured as "meeting the user's learning goals," Gamage et al. has proposed a framework to analyze the effectiveness of eLearning in MOOCs from a learner's perspective using a Grounded Theory (GT) methodology . In their study, the authors have proposed a ten-dimensional framework consisting of pedagogy, usability, motivation, interactivity, collaboration, network of opportunity, support for learner, content, technology, and assessment. They found that participants showed a keen interest in collaboration and interactivity, and that careful attention to pedagogy and the assessment is an effective support to their learning in MOOC. MOOC affordances are other criteria to measure the usefulness of the system studied by Delgado et al. in their research . The authors have shared some of their experiences combining MOOC-like content in on-campus courses in this study. According to the authors, the effectiveness of the MOOC affordances depends upon the composition of curriculum mode such as interleaved or sequential and the specific needs of the subject. Even though the efficacy and the affordances of MOOCs are an alternative to face-to-face pedagogies , other challenges influencing blended learning experience include student's attitude to learning, learner group dynamics, interactions among learners and a lack of well-known learning script. The authors conclude that MOOC technologies hardly support blended learning experiences due to the lack of social interaction, monitoring, and intervention by instructors. There is a general perception and to some extent the expectation that learning technology will be able to solve the problem of worldwide demand for higher education . Having said that, requiring MOOC to be part of learning technology poses another challenge in the field of

learning design (LD) i.e. how to design pedagogies to support students on a large scale. This requires addressing all the attributes of the field which were set out in the Larnaca Declaration, as suggested by Laurillard . These include: "the focus on pedagogy in all its forms; the description of LD as computational objects; the sharing of ideas; the scope across all sectors and subject areas; the pedagogic categorization of learning designs; the attention to what students do in order to learn; the mapping to implementations, and the focus on effectiveness".

3. Data and Methodology

We use a SWOT analysis to identify, describe and analyze some of the advantages and limitations of MOOCs, in terms of strengths, weaknesses, opportunities and threats, presented as in Fig. 1.

Fig. 1. SWOT analysis on MOOCs

3.1 Strengths

In the strength section, we have identified the following characteristics of MOOCs: source of lifelong learning, reputation and brand recognition, global presence, improving education accessibility, low prices, and creating large online communities.

3.2 Weaknesses

The weaknesses that we see as significant are: large number of dropouts, certification and accreditation, not suitable for complex education, interaction and creativity, and verification of the learner's identity. Unlike MOOCs are able to enroll more students than the traditional universities, they suffer from much larger drop-out rates . Some of the reasons for the low graduation rates are course methodology, lack of social interaction and creativity. Furthermore, certifications that MOOC companies deliver are not accredited by any relevant quality assurance organization

3.3 Opportunities

Through developing MOOCs, universities have the possibility to extend reachability and accessibility of their teaching activities globally. Having the ability to create large online communities MOOCs allow capturing large amounts of data. Such data may bring useful information to institutions in many different ways. For instance, having early access to global talent pool can help employers in their recruitment process in finding desired profiles.

3.4 Threats

While there are many positive aspects that MOOCs can offer, there are also ethical and privacy implications arising from various initiatives. Some of these concerns are listed by Marshall , including commercial exploitation of learners, as well as research ethics concerns arising from analysis done by academics and institutions. The lack of quality and standards can damage the reputation of an institution.

The MOOC phenomena has produced a lot of interesting information and experiences about course design and delivery in online context. The most popularized categorization of MOOCs is based upon two distinct pedagogical foundations: connectivism (cMOOCs) and behaviorism (xMOOCs) [23]. The literature reports that in MOOCs development, to some extent, all the three learning theories, behavioristic, cognitive, and sociocultural theories have been taken into consideration. Regardless of this, we believe that the sociocultural component, which puts emphasis on the interaction between lecturers and learners, cannot be fully applied here. MOOCs pedagogy is lacking in innovation since it is limited to video-watching, testing knowledge via multiple choice questions and provides little guidance to the students. Up to now, research is very scarce towards examining and determining the best pedagogical approaches that MOOCs should be based on . In this context, there are numerous factors and challenges we have identified:

- MOOCs platforms, from the technological point of view are still not close to replicate the interaction and community building, taking place in the traditional higher education sector, which represent the heart of the education.
- Due to large number of audiences, such massive learning is not suitable for focusing on the particular needs of each learner. Limited feedback is provided to learners on individual basis.

- New instructional design is required for assessment and promotion of interaction with the MOOCs content.
- Application of social learning is necessary to take advantage of online collaborative learning tools and to keep learners motivated.
- Students are offered continuous support in terms of guidance, mentoring, and providing instructions in traditional education. This support cannot be fully emulated by MOOCs.
- Quite a low number of students actually take assessment exams at the end of a MOOC which makes it difficult to assess whether students joining a MOOC are actually learning the content, and hence whether the MOOC is achieving its goal.

4. Results

The creation of consistent business models for MOOCs is one of the most discussed issues that has arisen so far in MOOCs history .From the early stages of their development, commercial MOOCs adhere to what is known as 'freemium to premium' business model. This model offers core services and products to a large group of users being initially free of charge. Once a consumer base has been established, a fee is then charged for premium or advanced services and products to a smaller portion of this user base. In the context of funding, MOOCs were established by funds originating from venture capitalists, universities and foundations, which aim to generate revenues by taking advantage of the innovative approach these platforms provide. Despite all the mentioned research efforts carried out towards establishing business models for MOOCs, we still lack coherent and systematic knowledge on creating a fully-fledged business model, which will overcome the uncertainties about how to monetize MOOCs platform businesses and qualify them as a valid alternative to traditional higher education institutions.

Conclusion

The aim of this paper was twofold. Firstly, it provided a SWOT analysis on MOOCs in general. Secondly, it aimed at identifying and analyzing the MOOCs challenges and opportunities from pedagogical and business standpoint. The analysis also includes the current trends of MOOCs expansion to create new educational markets for both supporting and sometimes overpassing the traditional educational institutions. Nevertheless, in doing so, MOOCs providers face challenges that need to be overcome even if partially to benefit

from the foreseen opportunities of MOOCs. Such challenges include the sociotechnical aspect, since MOOCs are still not close to replicate the interaction, and community building taking place in the traditional higher education sector. As far as learning challenges are concerned, we see that learning is not customized for individual needs and differences, and feedback provided to learner is limited. New instructional designs are required to promote interaction. Social learning needs also to be promoted where students will engage in intellectual discussions, debate, argue and develop critical thinking skills. More guidance and mentoring, continuous support and instructions should be offered to learners. Furthermore, encouraging more learners to take assessment exams and when necessary understanding the reasons for learners to avoid taking exams is required. Considering the business challenges, developing business models in order to monetize MOOCs is another challenge to overcome since MOOCs business models are far from being sustainable.

Currently, as regards achieving pedagogical innovations with a basis in using MOOCs, a lot of research is underway on applying machine learning approach on building assessment techniques followed by smart and interactive interfaces. In this context, big data learning analytics is another flourishing area as the candidate for promoting pedagogical innovation.

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MASS TOURISM IN GREECE AND ITS ENVIRONMENTAL IMPACTS

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ABSTRACT:

Mass tourism in Greece has become a significant economic driver, contributing substantially to the country's GDP. However, the rapid growth of tourism has raised concerns about its environmental impacts. This paper examines the effects of mass tourism on the environment in Greece, focusing on key areas such as coastal degradation, marine pollution, and waste generation.
Coastal areas, which are prime tourist destinations, face significant pressure from infrastructure development, pollution, and habitat destruction. The construction of hotels, resorts, and other tourist facilities are often built upon fragile ecosystems, leading to erosion, sedimentation, and loss of biodiversity. Marine pollution from cruise ships, recreational activities, and improper waste management further degrades coastal environments.
Cruise ships, recreational boats, and other marine vessels contribute to marine pollution through the discharge of sewage, oil spills, and littering. The accumulation of pollutants degrades water quality, harms marine ecosystems, and poses risks to marine life, including endangered species.
Mass tourism generates large amounts of waste, including plastic bottles, packaging materials, food waste, and other debris. Insufficient waste management infrastructure in some areas results in littering, illegal dumping, and pollution of land and water bodies. Improper disposal of waste also poses risks to public health and wildlife.
Addressing these environmental challenges requires a holistic approach involving sustainable tourism practices, environmental planning, and community engagement. Initiatives such as eco-tourism, marine conservation efforts, and waste reduction programs can reduce the negative impacts of mass tourism while preserving Greece's natural heritage for future generations. This paper underlines the importance of balancing economic growth with environmental sustainability in the management of tourism development.

1. Introduction:

Greece's economy is based mostly on tourism, which employs almost one-fifth of the labor force and accounts for 20% of the country's GDP, Greece became one of the most visited countries in the world in 2019 with over 33 million foreign visitors. Famous locations like Santorini, Mykonos, and Crete draw millions of tourists each year because of their stunning scenery, fascinating history, and lively cultures. But the natural environments of Greece, especially its coastal regions, are under tremendous pressure from this tourist inflow, so it's important to strike a balance between the country's economic interests and environmental sustainability.
In order to better understand the effects of mass tourism on Greece's coastal areas, this paper will focus on important problems like pollution, beach erosion, habitat destruction, fragmentation, and sedimentation. Through literature review this paper aims to emphasize the urgent need for sustainable tourism practices and responsible development policies by thoroughly analyzing these effects. Such actions must be taken in order to lessen the negative effects on the environment and to guarantee that Greece's natural beauty and cultural treasures are preserved for future generations. The purpose of this analysis is to further the conversation on sustainable tourism and promote policies that strike a balance between

environmental stewardship and economic growth.

2. Marine Pollution:

Marine pollution in Greece due to mass tourism poses a significant threat to the country's coastal ecosystems and marine biodiversity. According to a study conducted by the Hellenic Centre for Marine Research (HCMR), the increasing influx of tourists has led to a surge in marine pollution, primarily from sources such as cruise ships, recreational boating, and coastal development (Smith et al., 2022).

The discharge of untreated sewage and wastewater from cruise ships, in particular, has been identified as a major contributor to marine pollution in popular tourist destinations such as the Greek islands. Dr. Maria Papadopoulou, a marine biologist at the University of Athens, emphasizes the detrimental impact of marine pollution on Greece's marine ecosystems, highlighting the threat posed to coral reefs, fish populations, and other marine species (Papadopoulou, 2021).

To address this pressing issue, a multifaceted approach is needed, encompassing regulatory measures, technological innovations, and public awareness campaigns. Dr. Dimitrios Damalas, a senior researcher at HCMR, advocates for the implementation of stricter regulations to regulate wastewater discharge from cruise ships and recreational vessels, citing the need to enforce existing legislation such as the International Maritime Organization's MARPOL Convention (Damalas, 2020).

Furthermore, investing in advanced wastewater treatment systems and infrastructure upgrades can help mitigate the impact of marine pollution by reducing the discharge of pollutants into coastal waters. Dr. Nikolaos Voulvoulis, an environmental scientist at the University of Thessaloniki, underscores the importance of public engagement and education in combating marine pollution, emphasizing the role of eco-labeling schemes and environmental certification programs to incentivize sustainable tourism practices (Voulvoulis, 2019).

By implementing these solutions in collaboration with stakeholders from the tourism industry, government agencies, and local communities, Greece can mitigate the environmental impact of mass tourism and safeguard its marine ecosystems for future generations.

3. Waste Generation:

Waste generation in Greece due to mass tourism presents a formidable challenge, with millions of visitors flocking to the country's iconic destinations each year. The sheer volume of tourists, coupled with unsustainable consumption patterns, has resulted in a significant increase in waste production, overwhelming local infrastructure and polluting natural landscapes.

According to data from the Greek Ministry of Environment and Energy (2019), the tourism sector is responsible for a substantial portion of the country's total waste generation, particularly in coastal areas and popular tourist hubs such as Athens, Santorini, and Mykonos. The disposal of single-use plastics, food packaging, and other disposable items exacerbates the problem, contributing to littering, overflowing landfills, and marine pollution.

To address this pressing issue, a coordinated approach is needed, combining regulatory measures, community engagement, and innovative waste management strategies. One solution is the implementation of strict regulations to limit the use of single-use plastics and disposable packaging in tourist areas, building on recent initiatives such as the European Union's Single-Use Plastics Directive (European Parliament and Council, 2019). By banning plastic bags, straws, and other non-essential items, Greece can reduce the volume of waste generated by tourists and minimize the environmental impact of plastic pollution.

Additionally, investing in infrastructure upgrades and waste management facilities can help improve waste collection and recycling processes, particularly in high-traffic tourist destinations. Collaborating with local communities and businesses to promote recycling initiatives and sustainable consumption practices is also crucial in fostering a culture of environmental stewardship and responsible tourism.

By embracing these solutions and engaging stakeholders across the tourism industry, Greece can mitigate the environmental impact of waste generation and pave the way for a more sustainable tourism model that respects the integrity of its natural landscapes and preserves its cultural heritage for future generations to enjoy.

4. Coastal Degradation:

Coastal degradation in Greece is a major environmental concern, driven by the rapid rise of mass tourism. In 2019, Greece welcomed over 33 million international tourists, contributing approximately 20% to the nation's GDP and employing nearly one-fifth of the workforce (World Bank Data). The gorgeous coastal districts of Greece, celebrated for their natural beauty and historical value, have undergone substantial changes due to extensive tourist activity. This transformation has sparked a cascade of environmental concerns, including habitat

destruction, beach erosion, pollution, habitat fragmentation, and sedimentation (Greek National Tourism Organization).

The development of tourism infrastructure along the coastline is a major contributor to coastal deterioration. Hotels, resorts, restaurants, and recreational facilities frequently encroach on coastal ecosystems, resulting in the destruction of native vegetation and alteration of natural landscapes (UNEP Mediterranean Action Plan). For example, popular tourist destinations like Santorini and Mykonos have seen a significant increase in construction projects to accommodate rising visitor numbers, often at the expense of natural habitats. This habitat destruction disrupts the delicate balance of coastal ecosystems, leading to a decrease in biodiversity and degradation of ecosystem services critical to the region's health.

Another consequence of coastal development is beach erosion, exacerbated by the construction of protective structures such as seawalls, jetties, and groins (European Environment Agency). While these buildings are intended to protect tourist facilities from erosion, they disturb the natural movement of sand along the shore, causing beach depletion. Studies have shown that up to 28% of Greece's coastline is subject to erosion, threatening tourism profits and diminishing the aesthetic value of coastal areas.

Coastal pollution is a major threat to marine ecosystems, with tourist activities serving as the principal source of contamination (WWF Greece). Sewage discharge from hotels and resorts, oil spills from recreational boats, and littering all contribute to the pollution of coastal waters. It is estimated that tourism contributes to around 40% of the total waste generated in coastal areas during peak seasons. Improperly handled sewage introduces pathogens and nutrients into marine ecosystems, promoting eutrophication and algal blooms. Plastic waste left behind by tourists further exacerbates coastal pollution, endangering marine life and coastal ecosystems.

Additionally, coastal development disturbs wildlife migration pathways and fragments ecosystems vital to species survival (Archelon). Habitat loss and fragmentation present challenges for coastal species such as nesting sea turtles and migratory birds. Greece's loggerhead sea turtle population, for instance, faces threats from both habitat destruction and increased human activity on nesting beaches. Fragmentation isolates populations, lowering genetic diversity and increasing vulnerability to environmental stressors such as climate change and habitat loss.

Sedimentation caused by construction operations and improper land use practices exacerbates the environmental issues facing coastal ecosystems (Marine Pollution Bulletin). Sediment flow from building sites, deforestation, and agriculture can smother coral reefs, seagrass beds, and other vulnerable habitats, jeopardizing their health and productivity. Reports indicate that sedimentation rates in some coastal areas have increased by up to 30% due to unregulated construction and land-use practices.

Addressing these environmental issues requires the implementation of sustainable tourism practices, responsible development policies, and community engagement strategies. Eco-tourism, marine conservation efforts, and waste reduction programs are critical for mitigating the negative effects of mass tourism while preserving Greece's natural and cultural heritage for future generations.

Marine pollution in Greece, largely driven by mass tourism, can be effectively addressed through several strategic measures (Greek Ministry of Environment and Energy). Improved waste management systems, including comprehensive recycling and proper disposal facilities, are essential to reduce waste entering the marine environment. Stricter regulations and enforcement on waste disposal, boat emissions, and coastal development, along with regular monitoring and hefty penalties for non-compliance, can control pollution sources. Promoting eco-friendly tourism practices, such as using biodegradable products and reducing single-use plastics, can minimize the environmental footprint.

Establishing and managing Marine Protected Areas (MPAs) can safeguard vital ecosystems (Mediterranean Protected Areas Network). Public awareness and education campaigns can foster a culture of environmental stewardship among tourists and locals. Encouraging sustainable coastal development practices and supporting clean-up initiatives, such as beach clean-ups and ocean cleaning technologies, can mitigate existing damage. Collaboration between government agencies, local communities, NGOs, and the private sector can create a unified approach to tackling marine pollution. By adopting this multifaceted strategy, Greece can protect its valuable coastal and marine environments while balancing tourism and environmental sustainability.

5. Conclusions:

Addressing the intertwined challenges of marine pollution, waste generation, and coastal degradation in Greece necessitates a comprehensive and integrated approach. Marine pollution, exacerbated by tourism activities, requires stringent regulations and effective enforcement to control sewage discharge, oil spills, and plastic waste. Improved waste management

systems, including recycling programs and waste reduction initiatives, are imperative to mitigate the environmental impact of tourism. By promoting eco-friendly practices among tourists and businesses, Greece can significantly reduce its ecological footprint along the coastline.

Simultaneously, combating coastal degradation demands sustainable coastal development practices. This involves careful land-use planning to minimize habitat destruction and erosion, while also implementing erosion control measures like dune restoration and vegetative planting. Protecting and restoring critical habitats such as coral reefs, seagrass beds, and nesting beaches for endangered species like sea turtles are pivotal to ecosystem resilience. Marine Protected Areas (MPAs) play a crucial role in safeguarding biodiversity and providing refuge for vulnerable marine species, necessitating effective management and enforcement of conservation measures.

Public awareness and education campaigns are instrumental in fostering a culture of environmental stewardship and promoting responsible tourism behaviors. Engaging local communities, businesses, and tourists in conservation efforts can enhance compliance with environmental regulations and encourage sustainable practices. Collaborative initiatives involving government agencies, NGOs, academia, and the private sector are essential for developing and implementing holistic solutions to preserve Greece's coastal environments while supporting socio-economic development.

In conclusion, sustainable management of Greece's coastal resources requires a balanced approach that prioritizes environmental conservation alongside socio-economic benefits. By integrating sustainable tourism practices, enforcing stringent environmental regulations, and fostering community involvement, Greece can protect its natural heritage for future generations while ensuring the sustainability of its tourism industry. Embracing these principles will not only preserve the unique beauty and biodiversity of Greece's coastal areas but also contribute to global efforts in achieving environmental sustainability.

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HUMAN RESOURCES IN FOCUS: MANAGEMENT TECHNIQUES AND MOTIVATIONAL APPROACHES MOTIVATION AS A PREREQUISITE FOR SUCCESSFUL COMPANIES ON THE MARKET

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ABSTRACT

Effective human resource management is critical to an organization's success, as it directly affects employee satisfaction, productivity, and overall performance. It is especially important to emphasize that aligning management techniques and motivational approaches with organizational goals and values creates a supportive and dynamic workplace culture. Additionally, it highlights the need for continuous adaptation and innovation in response to evolving workforce dynamics and industry trends.

Motivation is a force in a person that conditions actions to achieve set goals. Each person is a special individual, motivated by different things. There is no unified concept for the successful implementation of motivational approaches. Companies should research the wants and needs of employees and optimally approach them. The company and employees with their attitudes and acceptance influence the very quality of motivation.

The purpose of this paper is to link HRM practices with employees' intrinsic motivation and creativity; we should try to evaluate the effectiveness of motivational practices in improving worker enthusiasm and ingenuity. Furthermore, the paper delves into modern motivational approaches to human resource management, to have a positive and significant effect on employee motivation, to encourage flexibility, innovation and efficiency, and to develop the maximum potential of the workforce.In this paper are investigated the motivational factors of employees in the HoReCa sector in NorthMacedonia. For this purpose, a survey and questionnaires are conducted with a sample of 30 employees in the HoReCa sector.

Keywords: HRM, employee, motivation, efficiency.

1.Introduction

The word "motive" comes from the Latin word "moevo", which directly means to move, incite or incite some activity. Thus, the very word "motivation" means some incentive that may arise from internal or external circumstances, to undertake a certain activity, which would further contribute to personal or general benefit. Motivation is represented in man as the only being that is conscious and has the ability to think. Man possesses certain motives inside himself which for him represent a driving line for what he does. Those motives can be very different - from personal pleasures and rewards to various benefits that are in his favor. That's why nowadays human resources managers in companies should pay attention to how and how much they motivate their employees because they represent the most important resource in the organizational society. Namely, the employee imagines the result of meeting the needs and chooses the means and methods, that is, the procedures with which he will achieve the goal, thus transforming the need into a motive. According to the large number of researches, motives initiate human activity, direct it in a certain direction and maintain the activity until the goal is fulfilled. Motivation is also closely related to productivity, because motivated people invest more than 90% of their efforts to complete the assigned work. Motives among employees can appear in a variety of ways, such as increased

salary, bonus, paid vacation, reward for staying at work overtime, etc., which will be discussed in detail later in the paper.

Scientific research confirms that the costs invested in the employee for his upgrading or training , as well as the rewards and bonuses that follow their monthly salary, are always less than the cost of one lost employee. That it is crucial to pay attention to the motivation of employees is also shown by the fact that retaining them leads to the realization of a full return on the investment. Employees are faced with work effort every day, and in order to reduce that effort, they must have some driving line that will give them the strength to continue working with quality and being productive. That driving line is actually the motivation that the employer is obliged to offer to the employee. Human resources managers of companies from the Balkan countries should proactively advocate for the improvement of Human Resources practices and make their employees a quality workforce that will appear on the market with a competitive offer. They also need to constantly develop their creativity and find new and more acceptable ways to communicate with their employees, regardless of the sector. The HoReCa sector appears as the most suitable sector in the summer period, but also throughout the whole year.therefore, managers should find the right way to motivate their employees, in order to attract a greater number of guests and tourists to their facilities.

The true value of an employee is seen in his mental capacity to deal with critical situations. Managers also need to find ways to communicate with employees who have mild intellectual disabilities. Furthermore, the paper will elaborate in detail the motivational factors that affect employees in the Balkans, as well as their mutual comparison, in order to see where more can be contributed to the increasing production of quality workforce.

2. Literature review

Maslow's Hierarchy of Needs is one of the most renowned theories of motivation. It posits that individuals are motivated by a series of hierarchical needs: physiological, safety, social, esteem, and self-actualization. In HRM, understanding these needs helps managers create environments where employees can fulfill these needs, thereby enhancing motivation (Maslow, 1943).

Herzberg's Two-Factor Theory differentiates between hygiene factors (e.g., salary, work conditions) and motivators (e.g., recognition, responsibility). While hygiene factors prevent dissatisfaction, motivators are essential for driving higher levels of employee satisfaction and performance (Herzberg, 1966). This theory underscores the importance of job enrichment and the role of intrinsic motivators in HRM practices.

McClelland identified three primary motivators: the need for achievement, the need for affiliation, and the need for power. This theory suggests that understanding these needs allows HR managers to tailor motivational strategies to individual employees, fostering a more personalized and effective approach to motivation (McClelland, 1961).

Vroom's Expectancy Theory emphasizes the role of expected outcomes in motivation. According to this theory, employees are motivated when they believe their efforts will lead to desirable performance and rewards. This highlights the importance of clear communication, achievable goals, and appropriate rewards in HRM (Vroom, 1964).

Employee engagement is a key outcome of effective motivational strategies. Engaged employees are more productive, exhibit higher job satisfaction, and are less likely to leave the organization. HRM practices that foster engagement include regular feedback, opportunities for career development, and recognition programs (Kahn, 1990).

Performance management systems that incorporate motivational theories can significantly enhance employee performance. For instance, setting clear and achievable goals (aligned with Vroom's Expectancy Theory) and providing regular feedback can help employees stay motivated and focused on their objectives (Locke & Latham, 2002).

H1:Salary is the biggest motivation among employees in the HoReCa sectorin North Macedonia..
H2: Motivated employees are more productive, innovative, and engaged, leading to better company performancein all Balkan countries.

3. Methodology

For the purposes of this paper, I used multiple methods in writing. My main goal was to examine the motivation of employees in the HoReCa sector in North Macedonia and compare it with the motivation of employees from the Balkan countries. To find data related to this topic, I used information recorded in past papers on similar topics, which talk about employee motivation, in the period from 2000 to now. I will list the papers that helped me in writing below in the references. Also, when writing this paper, the survey, which I conducted on 30 employees in the HoReCa sector

in North Macedonia, helped me to reach relevant results. In addition, the results of the same will be forwarded and analyzed. The survey was conducted within 10 days, and included employees from cafes, restaurants and hotels throughout North Macedonia.The survey was conducted via Google Forms.

All the other information that served me to make a comparison between the motivation among employees in the Balkan countries, I found in scientific researches and works that will also be listed below. The data I extracted from the papers was generally recorded in the period from March to June 2020

4. Results

4.1. Analysis of analysis of the most important questions in connection with the conducted survey on how Motivation affects employees in the HoReCa sector.

Question 1: Have you ever felt belittled, insulted or discriminated against by your employer?

That never happened
- It happens rarely
- It only happens when I do something wrong
- Yes, I often feel this way

To this question, more than a quarter of the respondents, or 36.7% of respondents answered that they rarely feel slighted, insulted or discriminated against by their employer. According to my estimates, this is due to the decreasing interaction between employees and employers. But also the fear of employers that they might be reported because of bad behavior with employees, which is not allowed by law.
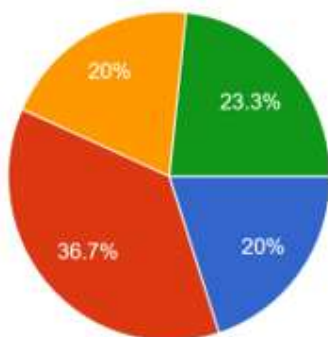
Own research, June 2024

Question 2: Do you think you are motivated enough for what you do?
- No, I do this because I have to
- It gives me neither pleasure nor trouble
- Yes, work is a pleasure for me
- I am motivated but not enough

Almost one half, or 43.3%, answered this question that their work gives them pleasure, but the number of the percentage of employees who answered that their work does not give them either pleasure or trouble is not small. This points to the fact that the indifference among employees is increasing and that they go to work because it is part of their daily routine or habit and they do not do it with pleasure. In these people, it has been proven that productivity decreases more and more from year to year. The positive side of this question is that the smallest part of people, or only 10%, answered that they do what they do because they have to.
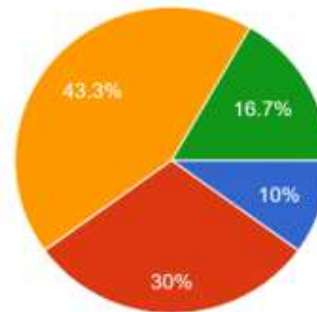
Own research, June 2024

Question 3: What do you think would motivate you to work harder and be more productive?
- Higher salary
- Bonuses
- Greater discount on company products for employees
- Paid vacation
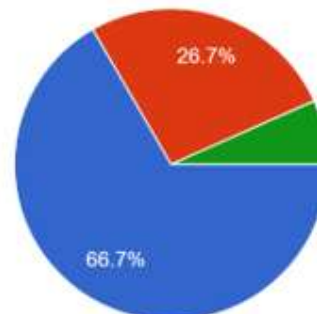
Own research, June 2024

Without a doubt, most of the respondents answered that they would be motivated mostly by a higher salary. That is 66.7% of the respondents. If they get a higher salary they would feel more important in

the company and that they are worth it. It would motivate them to do their best to be more productive and make greater results and something more for the company itself.Employees are primarily motivated by a higher salary as it directly impacts their financial well-being and quality of life. A competitive salary can provide a sense of recognition and value, enhancing job satisfaction and loyalty. Higher pay also serves as a tangible reward for hard work and performance, driving employees to achieve their best. For many, financial compensation is a clear indicator of career success and professional growth. Ultimately, a higher salary can attract top talent and reduce turnover, contributing to overall company success.

4.2. Analysis: Motivated Employees and Company Performance in Balkan Countries

Motivated employees are crucial for enhancing productivity, innovation, and engagement, which in turn drives better company performance. This relationship holds true in the Balkan countries, where economic development and competitiveness are key priorities. Here's a closer look at this dynamic:

Productivity:
- Context: In the Balkan countries, the drive for economic growth necessitates high productivity levels. Motivated employees are more likely to put in the effort and time required to meet and exceed performance targets.
- Impact: Increased productivity directly correlates with higher output and efficiency, reducing operational costs and increasing profitability for companies in the region.

Innovation:
- Context: The Balkan region is striving to enhance its global competitiveness through innovation. Motivated employees, who feel valued and engaged, are more likely to contribute creative ideas and solutions.
- Impact: Innovation leads to the development of new products, services, and processes, enabling companies to differentiate themselves in the market and achieve sustainable growth.

Engagement:
- Context: Employee engagement is a critical factor for retaining talent and maintaining a positive workplace culture. In the Balkans, where labor markets can be competitive, engaged employees are less likely to leave their jobs.
- Impact: High engagement levels foster a sense of belonging and commitment, resulting in

lower turnover rates, reduced recruitment costs, and a more stable workforce.

Company Performance:
- Context: The cumulative effect of increased productivity, innovation, and engagement is improved overall company performance. Companies in the Balkans that prioritize employee motivation tend to perform better in terms of profitability, market share, and customer satisfaction.
- Impact: Better company performance not only boosts the economic landscape of the Balkan countries but also attracts foreign investments and promotes a positive business environment.

Case Studies and Examples:
- Example: Companies in Slovenia, known for their progressive HR practices, have shown how motivated employees contribute to business success. Similarly, firms in Croatia that invest in employee development and well-being report higher innovation rates and market competitiveness.
- Trend: Across the Balkan region, there is a growing recognition of the link between employee motivation and business outcomes, prompting more companies to adopt strategies that enhance motivation.

5. Limitations

While motivation is a crucial factor in achieving business success, it is not a panacea. Overemphasis on motivation without addressing other fundamental aspects like skill development, resource availability, and strategic planning can lead to incomplete solutions. Additionally, motivation is inherently subjective and can be influenced by a variety of external factors such as economic conditions, personal issues, or organizational changes, which are beyond the control of management. Another limitation is the difficulty in consistently measuring motivation levels and their direct impact on performance, making it challenging to quantify and manage effectively.

To address these limitations, companies should adopt a holistic approach that balances motivation with other critical organizational needs. It's essential to invest in comprehensive training and development programs that equip employees with the necessary skills and knowledge. Furthermore, companies should implement robust support systems, including effective communication channels and adequate resources, to enable employees to perform their tasks efficiently.

Regular assessments of employee motivation levels, combined with feedback mechanisms, can help identify areas for improvement. Lastly, leadership should remain adaptable, recognizing that motivation strategies may need to evolve with changing market conditions and organizational priorities. By doing so, companies can create a sustainable and motivating work environment.

6. Discussion and recommendations

According to the conducted research, it has been proven that employees are most motivated when they are somehow rewarded. The reward they will receive can be in a variety of shapes and forms, but human resource managers should be very careful about that, because each individual is motivated by a different type of reward. Research shows that a higher salary is what gives employees the most incentive to continue to do quality work and achieve higher results. In my opinion, this is because money is highly valued nowadays and with it we can afford anything materially. With the money, they can afford a quiet life, more entertainment, vacations in distant and exotic destinations, drive decent and beautiful cars, live in large and comfortable apartments and countless other pleasures that they can afford with a higher salary. It has been psychologically proven that when people are happy and satisfied with their private lives, they will do their best in the workplace to achieve high results and improve themselves. That is why the higher salary would mostly contribute to a higher degree of motivation, but also other benefits that the employees can provide to the company. Because the survey showed that salary is what motivates employees the most, the first hypothesis is automatically accepted as correct.

According to other research, it has been proven that employees from the Balkans are somewhere on the same level when it comes to motivation at work. In every country, HR managers need to take the time to analyze what their employees need in order to market a better workforce.Motivation plays a crucial role as a prerequisite for successful companies in the market. It is the driving force behind employee performance, innovation, and organizational growth. Motivated employees are more likely to be engaged, productive, and committed to their work, which directly impacts the overall success of a company. A motivated workforce is not only more efficient but also more innovative, as motivated individuals are more likely to take initiative, suggest improvements, and contribute to problem-solving processes.According

to the survey, we can see that motivated employees are in the largest percentage more productive when it comes to the countries of the Balkans. We hereby confirm that the second hypothesis is accepted.

Conclusion

At the organizational level, motivation fosters a positive work environment that enhances collaboration and communication. When employees feel motivated, they are more likely to share ideas and work towards common goals, which can lead to increased creativity and innovation. This is especially important in today's competitive market, where companies must constantly adapt and innovate to stay ahead.

Furthermore, motivation is closely linked to employee retention. Companies with a motivated workforce experience lower turnover rates, which reduces the costs associated with hiring and training new employees. A stable workforce also helps maintain organizational knowledge and expertise, which is crucial for sustained success. Additionally, motivated employees are often brand ambassadors, promoting the company's products and services to potential customers and partners, thereby enhancing the company's reputation and market position.

Leadership plays a critical role in fostering motivation within a company. Effective leaders inspire and empower their employees, set clear goals, and provide the necessary resources and support to achieve them. They also recognize and reward employees' efforts and achievements, which reinforces positive behavior and encourages continued motivation. Transparent communication and a supportive organizational culture are also essential components of a motivational environment.

In conclusion, motivation is a key factor in the success of companies in the market. It drives employee performance, fosters innovation, and enhances organizational growth. By creating a motivating work environment and cultivating a culture of recognition and support, companies can maximize their employees' potential, leading to increased productivity, better retention, and a stronger competitive edge. Therefore, investing in employee motivation is not just a human resource strategy but a critical business strategy that can significantly impact a company's long-term success and sustainability in the market.

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SMES AND OPEN INNOVATION: EFFECT OF OPEN INNOVATION ON FIRM PERFORMANCE THROUGH TYPE OF INNOVATION

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Mentor Supervisor: Prof. Leonid Nakov, PhD, Vice-President of ASECU

Abstract

Innovation is crucial for growth and business development, and represents a reliable way through which to gain competitiveness within the marketplace. Based on a comprehensive and systematic review of the literature best able to detect the main thematic areas of research topic, the aim of this paper is to investigate how the paradigm of open innovation influences SMEs performance and to provide suggestions for future research avenues.

Open innovation is expressed through three different processes: the acquisition of external technology (inbound innovation); the external exploitation of technology (outbound innovation); and coupled innovation. Traditional literature in terms of Open Innovation broadly explored the potential benefits firms might achieve in collaborating with external partners. Most of the literature has revealed the positive effect that a firm's application of OI activities has on its innovation performance. Indeed, an increase in the interactions a company has with other organizations generates greater access to new ideas, skills, technologies and other intangible assets, as well as enhanced possibilities to innovate with success.

The influence of OI activities on firm performance has been extensively ana- lyzed by the scientific literature; in particular, the involvement of innovation performance on the cost-benefit ratio of R&D, the acquisition of patents and the protection of intellectual property, the relation between appropriability and openness on efficiency and novelty, and the impact on the realization of new types of products or on financial performance. Set in the context of the small and medium enterprise (SME) sector, the paper examines SME capabilities ob- tained from outbound and inbound knowledge flow to adopt innovation.

Key words: Open innovation, Firm performance, SMEs.

Introduction

Small and Medium-sized Enterprises SMEs) around the world face serious challenges related to limited financial resources. This limitation negatively affects their capacity for innovation, as the budget for developing new products or ser- vices is constrained, creating a significant barrier to growth.[1]

Open innovation refers to innovation processes in which firms interact intensively with their environment, leading to the exploration and exploitation of significant amounts of external knowledge. Inbound open innovation involves exploring external knowledge. SMEs contribute significantly to the Gross Domestic Product (GDP) and are major sources of employment. They account for a large share of new job creation and provide opportunities for skill development and career growth.

For example, pharmaceutical firms may acquire new technologies from external partners, such as biotechnology firms. The exploitation of external knowledge refers to the commercialization of technological knowledge (IP). For example, a company may license its IP to external entities.

For SMEs, open innovation provides significant opportunities in the context of external knowledge exploration. External collaborators, such as customers, academic institutions, business partners, suppliers, and distributors, become instrumental participants in the new product or service development process. Companies that systematically engage in open innovation typically achieve im- pressive results in new product development performance. This can be con- sidered a natural outcome, as it is often the case that 'consumers innovate for consumers.

Through open innovation, SMEs have access to a vast number of ideas, which can significantly

impact their sustainable competitive advantage by enabling them to shift their strategic position from 'followers' to 'challengers.

Literature Review

The primary aim of this research is to investigate the impact of open innovation on Small and Medium-sized Enterprises (SMEs) and to understand how lever- aging external ideas, resources, and collaborations can enhance their innovation capabilities and overall performance. This research seeks to:

- Evaluate the Benefits: Assess how open innovation contributes to SMEs' innovation processes, including increased access to diverse knowledge, ac- celerated product development, and improved competitive positioning.
- Identify Limitations: Examine the challenges and limitations associated with open innovation, such as intellectual property risks, cultural barri- ers, and quality control issues, and explore how SMEs can address these challenges effectively.

Analyze Practical Applications:

Investigate real-world case studies of SMEs that have implemented open innovation strategies, identifying best prac- tices and lessons learned that can inform other SMEs looking to adopt similar approaches.

Provide Recommendations: Offer actionable recommendations for SMEs on how to leverage open innovation to overcome financial and resource constraints, enhance their innovation performance, and sustain a compet- itive advantage in their respective industries.

By achieving these aims, the research will contribute to a deeper under- standing of how open innovation can be effectively applied by SMEs to drive innovation and growth, while also providing insights into managing the associ- ated challenges and risks.

The concept of open innovation

The concept of open innovation has been analyzed by numerous authors and has seen wider application in the innovative activities of many companies. The emphasis is on the opportunities for innovations to move more easily between the external environment and the internal research and development process. In the process of open innovation, projects can be initiated from both internal and external sources, and new technologies can enter the project at different stages. The project can also reach the market in several ways, including traditional sales channels, licensing, and the formation of business units outside the existing organizational structure of companies, such as technological spin-off ventures[2]. Open innovation is a paradigm that emphasizes the use of both internal and external ideas, knowledge, and technologies to accelerate innovation and bring new products or services to market. Open innovation leverages the collective intelligence and capabilities of a broader ecosystem, including customers, sup-

pliers, academic institutions, and even competitors.

Small and Medium-sized Enterprises (SMEs) can greatly benefit from open innovation by leveraging external resources and collaborating with partners to enhance their innovation processes. Here are key ways in which SMEs can take advantage of open innovation:

- Collaboration with External Partners
- Accessing External Knowledge
- Leveraging External Ideas

Figure 1: Innovation Models and Resulting Managerial Challenges

Innovation Model	Challenges for Management	Resulting Managerial Activities
Closed	1. Attract the "best and brightest"	1. Ensure excellent compensation, resources, and freedom
	2. Bringing research results to development	2. Secure a dedicated development function for the exploitation of research and connect it with market knowledge
External	1. Explore a broad spectrum of innovation sources	1. Carefully scan the environment
	2. Integrate external knowledge with the company's resources and capabilities	2. Develop absorptive capacities and/or use alliances and networks
Open	1. Motivate the development and collaboration of external knowledge	1. Ensure internal rewards (recognition) and a structure for collaboration
	2. Integrate these sources with the firm's resources and capabilities	2. Develop absorptive capacities and/or use alliances and networks
	3. Diversify the exploitation of intellectual property sources	3. Share or gift intellectual property to maximize profit and the overall innovation portfolio

Source: West and Gallagher, 2006.

"Open innovation is the use of purposive inflows and outflows of knowledge to accelerate internal innovation, and expand the markets for external use of innovation, respectively. This paradigm assumes that firms can and should use external ideas as well as internal ideas, and internal and external paths to market, as they look to advance their technology."

The basic idea of Open Innovation is to change our previous common believes that by revealing our ideas somebody will steal them. The new believes are or should be that by revealing our ideas we can improve them or connect them with other ideas to create a final version of a certain innovation implementation. The idea of connecting two hunches was explained in the RSA video "Where the good ideas come from?" made by Steven Johnson.

Open innovation, as defined by West and Gallagher, is the systematic stimulation and exploration of a wide range of internal and external sources of innovation opportunities, the responsible integration of that exploration with the company's opportunities and resources, and the broader exploitation of those opportunities through multiple channels. Therefore, the paradigm of open innovation defined in this way goes beyond the use of external sources of innovation, such as customers, rivals, and universities, representing a shift in the use, management, and engagement of intellectual property, as well as in the generation of technical and research-related intellectual property.[3]

Effect of Open Innovation on Firm Performance

Open innovation has a profound impact on firm performance, influencing vari- ous aspects of business operations and outcomes. : Access to a broader pool of ideas and technologies increases the volume and diversity of innovations.

Firms can introduce more innovative products and services. Crowd sourcing ideas from customers and external experts can lead to breakthrough innovations that the internal team might not have conceived. Introducing innovative products and services that meet market demands can drive sales and revenue growth. Open innovation helps firms stay competitive and capture new market opportunities.
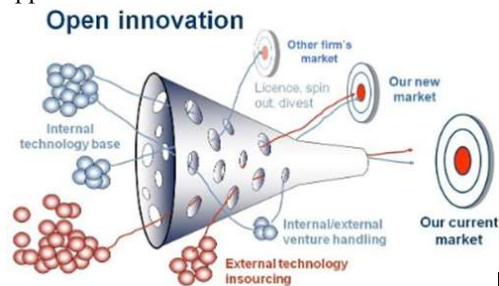

Figure 2: A simple scheme showing how Open Innovation works Source: Lindegaard, S., "Making Open Innovation Work", 2011

A company that adopts an open innovation strategy to develop new products can expand its market share and increase sales. Collaborating with external partners accelerates the development and commercialization of new products, allowing firms to respond quickly to market changes and customer needs. Partnering with a startup for rapid prototyping and testing

can shorten the product development cycle. Firms that adopt open innovation often develop a culture of continuous learning and adaptability, which is crucial for long-term success. Open innovation fosters a flexible and responsive approach to innovation, enabling firms to adapt quickly to market dynamics and emerging trends. Us- ing open innovation platforms to gather ideas from various industries can lead to cross-industry innovations and new business opportunities. Companies like Google and Tesla are renowned for their open innovation strategies, which bolster their reputation as cutting-edge innovators.

Open innovation significantly enhances firm performance by improving innovation capability, financial outcomes, market competitiveness, organizational learning, strategic flexibility, and brand reputation. By effectively leveraging external resources and collaborating with various stakeholders, firms can accelerate their innovation processes, reduce costs, and better meet market demands. This dynamic approach to innovation ensures that firms remain competitive and resilient in an ever-evolving business landscape.

Case Studies/Examples

In an increasingly competitive and dynamic world, the ability to innovate re- mains a critical driver of business success. However, traditional, closed innova- tion models, where companies rely solely on their internal resources for research and development (R&D), are often challenged by limited resources, expertise, and the rapid pace of technological advancements. This has led to the rise of open innovation, a collaborative approach where companies actively engage ex- ternal stakeholders, such as universities, startups, and independent inventors, to co-create and accelerate innovation.[4]

Nestl´e. Recognizing the need for sustained innovation in the food and beverage industry, Nestl´e actively participates in open innovation through its Nestl´e X platform. This platform connects the company with startups and en- trepreneurs, fostering collaboration and co- creation of innovative solutions in critical areas like:

- Nutrition: Addressing concerns around healthy and sustainable food options.
- Sustainability: Finding ways to minimize environmental impact through- out the supply chain.
- Packaging: Exploring innovative and sustainable packaging solutions.

Success Story: Through Nestl´e X, the company partnered with IBM Food Trust to develop a blockchain-based platform for food traceability. This platform enhances transparency and trust within their supply chain, allowing consumers to track the origin and journey of their food products. Nestl´e's approach demonstrates the power of open innovation in addressing industry-wide challenges. By collaborating with external partners, they can gain access to diverse perspectives and expertise, leading to solutions that benefit the entire industry.

The Nestl´e X platform exemplifies how open innovation fosters collaboration for shared goals. By partnering with startups and entrepreneurs, Nestl´e can accelerate its own innovation efforts while nurturing the growth of the broader innovation ecosystem.

Procter & Gamble (P&G). P&G, a leading consumer goods company, has been a pioneer in open innovation. Through its "Connect + Develop" program, the company col- laborates with universities, startups, research institutions, and individuals to source innovative ideas and technologies. This program has yielded nu- merous successful products, including Swiffer, Febreze, and Tide Pods. In 2021, P&G reported that 50% of its all innovations originated from external collaborations, showcasing the program's effectiveness in fostering innovation and driving growth.

Tesla Motors (Early Years) The lack of new ideas and products is a problem for organizations of all sizes. In an ever-changing world, organizations need to be able to adapt and innovate to remain competitive. Organizations may experience a lack of new ideas and products, including a focus on the short term, a lack of investment in research and development, and a culture that is not conducive to risk and creativity. However, there are some actions that organizations can take to overcome a lack of new ideas and products, namely, creating a culture that supports innovation, rewarding employees for new ideas, and strengthening a long-term culture, especially regarding financial results. Some examples of how organizations can overcome a lack of new ideas and products include creating multidisciplinary innovation teams, holding brainstorming sessions, and launching internal innovation challenges.

The inability to adapt to changes and new market conditions challenges companies in their innovation process. To remain competitive, organizations must adapt to new trends and market demands in an ever-changing world.

Some reasons why organizations may experience an inability to adapt are a focus on the status quo, a lack of market understanding, and a fear of change. There are actions that organizations can take to over- come the inability to adapt, such as constantly monitoring the market, being flexible and adaptable, and creating a culture of learning and innovation. Companies must conduct regular market research and create agile decision-making processes to overcome their failure to adapt.

The loss of competitive advantage. A loss of competitive advantage is an inherent risk of companies operating in constantly evolving environments. Organizations need to be able to stay ahead of their competitors to remain competitive. Organizations lose their competitive advantage due to competitor innovation, changes in the market, and lack of investment. Some actions can be taken to avoid a loss of competitive advantage, such as focusing on innovation, keeping an eye on changes in the market, and investing in the development of new products and processes.

A decline in employee morale. How often have you heard the same complaints about the inability to move from an idea to launch an innovation? I thought the facts would speak for themselves. I thought logic would solve this. I forgot I needed a membership. I thought people knew me and would help. I forgot that they didn't see what I did. Projects can fail before they get off the ground un- less leaders have a story convincing others to support the change (Kanter, 2020). A decline in employee morale is a severe problem for organizations. Low morale leads to other issues, such as lost productivity, high turnover, and reduced quality. Employee morale may decline because of a lack of recognition, growth opportunities, and a toxic culture. Some actions can improve employee morale, such as creating a positive culture focused on innovation and implementing a formal recognition program for new ideas and suggestions.

Tesla learned to manage these risks in its innovation process by implementing a culture of error tolerance and encouraging its employees to think "outside the box."

Innovation process at Tesla Inc. The innovation process at Tesla is intrinsically related to the personality of its founder and CEO, Elon Musk. Born in South Africa, Musk is considered one of our time's most outstanding and most renowned entrepreneurs. We may disagree with some of your positions, especially if we consider the level of commitment he expects from

his employees at a time when work-life balance is essential to achieving our professional goals. But, as a brilliant entrepreneur, Musk is committed to doing whatever it takes to get top-notch results from his efforts. Musk encourages his employees to abandon the "traditional" thinking to develop new ideas. He continually expands his vision beyond what is conventional. Almost nothing Musk did could be considered traditional, and despite some failures in his journey, we can assume that this is the source of the success of his ventures.

Tesla has developed a partnership between its business managers and data scientists to establish trust and communication, allowing it to leverage this data better and help answer strategic questions for its business. Simplicity is one of the company's success factors, as a significant variety of data can quickly become highly complex. "Keep it Simple" is Tesla's mantra. The company's success largely depends on its ability to handle data to its benefit. This company's data-driven approach to manufacturing and developing electric vehicles has allowed it to continually collect vast amounts of information to improve its products and business strategies. However, managing large volumes of data brings with it its own set of challenges. Tesla's success in this area is mainly due to its adherence to clearly defined protocols for obtaining and validating data and robust security measures. Tesla's innovation process is characterized by several key elements, including:

- Vertical integration: Tesla designs, manufactures, and sells its vehicles, batteries, and software, which gives it a high degree of control over its innovation process.
- Rapid iteration: Tesla is known for its rapid iteration cycle, allowing it to bring new products and features to the market quickly.
- Employee empowerment: Tesla encourages employees to be innovative and take risks.

Starbucks. Since opening its first store back in 1996, the Seattle-based coffee behemoth now includes almost 30,000 coffee shops around the world and is valued at a staggering $30 billion. A strong commitment to open innovation has helped to drive this incredible growth.

As a company, Starbucks has always placed a lot of value on refining its products and procedures following customer feedback. In the company's earliest years, this was reflected in simple systems like suggestion boxes and customer surveys.

In 2008, however, founder Howard Schultz launched the open innovation platform "My Starbucks Idea". This platform encouraged customers and fans to share their ideas and suggestions for how to make the company's beloved products even better.

What made "My Starbucks Idea" unique? "My Starbucks Idea" was a lot more than just a fancy suggestion box. To help encourage a community of fans, Starbucks enabled users to vote and comment on ideas they liked. There was also a public leaderboard showing the most dedicated fans, as well as those with the most popular ideas.

Users could also see profiles for the Starbucks 'Idea Partners' - the company representatives tasked with managing and monitoring online discussion and working with customers on their suggestions. This helped put a human face on the company.

This blend of open innovation, customer co-creation, and fan commu- nity site proved immensely popular. Not only did it create a lot of great product innovations for Starbucks, but it also helped to drive increased customer loyalty.

Limitations of Open Innovation

Open innovation has become a popular approach for companies looking to en- hance their innovation capabilities by leveraging external ideas, resources, and collaborations. While this model offers numerous benefits, such as increased access to diverse knowledge and accelerated innovation processes, it also comes with several limitations that can pose significant challenges for organizations. Understanding these limitations is crucial for companies to navigate the complexities of open innovation effectively.

Intellectual Property Risks: Open innovation has become a popular approach for companies looking to enhance their innovation capabilities by leveraging external ideas, resources, and collaborations. While this model offers numerous benefits, such as increased access to diverse knowledge and accelerated innovation processes, it also comes with several limitations that can pose significant challenges for organizations.

Understanding these limitations is crucial for companies to navigate the complexities of open innovation effectively.

- Cultural Barriers: If not addressed, cultural barriers can lead to in- efficiencies, delays, and even the failure of innovation projects.

To over- come these challenges, organizations need to invest in building mutual understanding, establishing clear communication channels, and fostering a culture of openness and adaptability. This may involve training, regular interaction, and the creation of cross-cultural teams to bridge the gap between different organizational cultures.

- Quality control: refers to the challenges associated with maintaining consistent standards and ensuring that innovations align with a company's strategic goals when relying on external sources. To mitigate these challenges, companies should develop robust quality control practices, establish clear expectations with external partners, and ensure effective integration of external innovations into their strategic framework.

Conclusion

The term 'Open Innovation' was first defined by Chesbrough as a new model for industrial innovation, initially understood and implemented as continuous cooperation between companies to open up internal innovation processes. Open innovation represents a paradigm that emphasizes that companies can and should leverage external knowledge and ideas, reducing control to achieve higher profits through their innovative activities and intellectual property. Open source soft- ware, a prominent example of open innovation, has become a key method for technological development.[5] Its positive impact on the innovative performance of firms is driven by a shift in the philosophy of intellectual property, which now reflects a shared right to use technology and the effects of global, voluntary collaboration. Today, the concept of open innovation also extends to coordinating a diverse range of participants with multiple roles in the innovation process. In other words, creating and managing innovation communities have become crucial for the success of open innovation. Open innovation offers numerous benefits to organizations, including enhanced idea generation, accelerated time to market, cost efficiency, expanded market opportunities, and continuous learning. Organizations can tap into external stakeholders' collective intelligence and creativity, drive innovation, and gain a competitive advantage in today's dynamic business landscape by embracing open innovation principles and their models. The open innovation literature has flourished, focusing on how opening expands the space of relationships. As a research community, we have been excited to document new forms of open innovation and how different types of relation- ships emerge. As a result, the study of closing relationships has taken a back seat. But what happens to open innovation after the relationships are in place?

What are the antecedents and consequences of closing open innovation?

It is indeed timely to address how closing open innovation raises new questions for open innovation. While focusing on closing may be seen as giving up on open innovation, nothing could be further from the truth. Open innovation has grown into a centerpiece of 25 almost any innovation strategy, and as a result, it can no longer be treated as a minor activity of some renegade firm. As open innovation is becoming the norm, research needs to focus on the entire life of the phenomenon, from inception, expansion, and finally, closing.[6]

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Students Presentations - Session 4

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ENVIRONMENTAL HARMONY: ECOLOGY, ECO-TOURISM, AND THE PURSUIT OF SUSTAINABLE DEVELOPMENT

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Abstract

Since the release of Our Common Future by the World Commission on Environment and Development (WCED) in 1987, the concept of sustainable development has emerged dramatically in discussions and debates about development, and the Rio Conference on Environment and Development (UNCED) has revived this concept.) became in 1992. . It offers a vision of complementarity between economic growth and the environment, rather than the view that more of one brings less of the other. Sustainable development here means sustainable development of humanity because, as is the oft-repeated obvious wisdom, development is about people and human society ultimately depends on its natural environment. The main reason humanity faces unacceptable and growing levels of poverty, inequality and environmental deprivation today is that past development practices violated these two principles. From an analytical perspective, sustainable development addresses issues surrounding human society and its activities, which can ultimately be specified in terms of two types of relationships: relationships between people and relationships between people and the natural environment. The economies of developing countries targeting tourism as a development strategy require rapid and effective implementation of environmental management principles to achieve expected growth potential. Land and other biophysical resources are limited. Therefore, the only way to boost economic growth is through better innovation and efficient resource management. This article explores the current understanding of environmental management principles and their role in achieving sustainable tourism. Furthermore, environmental management should be explained to illustrate the link between sustainable tourism and environmental management.

1. Introdutcion

Overview of Environmental Harmony:
Environmental harmony refers to a state where human activities coexist with the natural world in a balanced and sustainable manner. This concept emphasizes the importance of maintaining ecological balance, conserving natural resources, and promoting sustainable development.
Key Aspects of Environmental Harmony:

1. Balance Between Human Activities and Nature: Ensuring that human development and activities do not disrupt the natural balance and Implementing practices that minimize environmental impact.
2. Conservation of Natural Resources: Protecting natural habitats and ecosystems, Sustainable use of resources like water, forests, and minerals to prevent depletion.
3. Biodiversity Preservation: Maintaining the variety of life forms on Earth, Protecting endangered species and promoting the health of ecosystems.
4. Pollution Reduction: Implementing measures to reduce air, water, and soil pollution. And Encouraging the use of clean and renewable energy sources.
5. Climate Change Mitigation: Reducing greenhouse gas emissions, Promoting practices and technologies that help in adapting to and mitigating the impacts of climate change.
6. Sustainable Development: Integrating economic growth with environmental protection and social

equity. And Ensuring that development meets present needs without compromising the ability of future generations to meet theirs.

Summary: Maintaining a balance between human activities and nature by minimizing environmental impact, conserving natural resources, preserving biodiversity, reducing pollution, mitigating climate change, and promoting sustainable development. This involves protecting ecosystems, using resources sustainably, reducing greenhouse gas emissions, and integrating economic growth with environmental protection to ensure that future generations can meet their needs.

Importance of Environmental Harmony

1. Ecosystem Health: Healthy ecosystems provide essential services such as clean air and water, pollination of crops, and climate regulation.
2. Human Well-being: A balanced environment contributes to the overall health and well-being of human populations. Provides recreational opportunities and enhances quality of life.
3. Economic Benefits: Sustainable practices can lead to long-term economic benefits by conserving resources and reducing costs and Eco-friendly industries and eco-tourism can generate revenue and create jobs.
4. Social Equity: Ensuring fair distribution of resources and opportunities, Engaging local communities in conservation and sustainable development efforts.
5. Resilience to Environmental Changes: A balanced and diverse ecosystem is more resilient to changes and can better withstand environmental stresses.

Summary: Environmental harmony ensures ecosystem health, providing essential services like clean air, water, and climate regulation. It supports human well-being by enhancing health, recreational opportunities, and quality of life. Sustainable practices offer economic benefits through resource conservation, cost reduction, and the growth of eco-friendly industries. Social equity is promoted by fair resource distribution and community engagement in conservation efforts. Lastly, balanced ecosystems are more resilient to environmental changes, helping to withstand stresses and maintain stability.

Link Between Ecology and Eco-Tourism

Eco-tourism is a form of sustainable travel that supports the conservation of natural environments and the well-being of local communities. It plays a crucial role in promoting environmental harmony by:
1. Raising Awareness: Educating tourists about environmental conservation and sustainable practices.

2. Providing Financial Support: Generating revenue for conservation projects and local communities.
3. Encouraging Sustainable Practices: Promoting the use of eco-friendly facilities and services.
4. Conserving Biodiversity: Supporting the protection of natural habitats and wildlife.

By integrating ecological principles with tourism, eco-tourism fosters a deeper appreciation of nature and contributes to the overarching goal of achieving environmental harmony.

Summary: Eco-tourism is a form of sustainable travel that promotes environmental harmony by raising awareness about conservation, providing financial support for conservation projects and local communities, encouraging sustainable practices through eco-friendly facilities, and conserving biodiversity by protecting natural habitats and wildlife. By integrating ecological principles with tourism, eco-tourism enhances the appreciation of nature and contributes to environmental conservation and the well-being of local communities.

Importance of Sustainable Development

Sustainable development is crucial for the long-term well-being of our planet and its inhabitants. It aims to meet the needs of the present without compromising the ability of future generations to meet their own needs.

Key Aspects of Sustainable Development

1. Economic Growth: Promotes economic development that benefits everyone, not just a select few, Encourages the efficient use of resources to ensure long-term economic stability.
2. Social Inclusion: Aims to improve the quality of life for all individuals. Focuses on reducing poverty and inequality, ensuring fair distribution of wealth and opportunities.
3. Environmental Protection: Emphasizes the need to protect and restore natural ecosystems. Promotes the use of renewable resources and the reduction of pollution and waste.

Summary: Sustainable development is crucial for the long-term well-being of our planet and its inhabitants, ensuring that present needs are met without compromising the ability of future generations to meet theirs. It involves promoting inclusive economic growth that benefits all, enhancing social inclusion by reducing poverty and inequality, and ensuring fair distribution of wealth and opportunities. Additionally, it emphasizes environmental protection by restoring ecosystems, promoting renewable resources, and reducing pollution and waste, thereby supporting a balanced and sustainable future.

Importance to Human Well-being

1.   Improved Quality of Life: Sustainable development ensures that basic human needs such as food, water, shelter, and healthcare are met. Encourages access to education and employment opportunities.

2.   Health Benefits: Reduces pollution and environmental hazards that can lead to health issues.

Promotes healthier lifestyles through better urban planning and sustainable agricultural practices.

3.   Social Equity and Inclusion:

Aims to reduce inequalities within and among countries.

Ensures that marginalized and vulnerable groups have equal access to resources and opportunities.

Summary: Sustainable development improves quality of life by meeting basic needs like food, water, shelter, and healthcare, and by providing access to education and employment opportunities. It also offers health benefits by reducing pollution and environmental hazards, promoting healthier lifestyles through sustainable urban planning and agriculture. Additionally, it focuses on social equity and inclusion, reducing inequalities, and ensuring that marginalized and vulnerable groups have equal access to resources and opportunities.

Environmental Benefits

1. Conservation of Natural Resources:

Ensures that natural resources are used efficiently and responsibly.

Protects ecosystems and biodiversity, ensuring that natural habitats and species are preserved.

2. Climate Change Mitigation:

Reduces greenhouse gas emissions through the promotion of clean energy and sustainable practices.

Enhances the resilience of communities to the impacts of climate change.

3. Pollution Reduction:

Promotes waste management and recycling to reduce pollution.

Encourages the use of environmentally friendly products and technologies.

Summary: Sustainable development conserves natural resources by ensuring their efficient and responsible use, protecting ecosystems and biodiversity. It mitigates climate change by reducing greenhouse gas emissions through clean energy and sustainable practices, while enhancing community resilience to climate impacts. Additionally, it reduces pollution by promoting waste management, recycling, and the use of environmentally friendly products and technologies.

Economic Benefits

1. Long-term Economic Stability:

Promotes economic activities that are viable in the long run and do not deplete resources.

Encourages innovation and the development of green technologies, leading to new job opportunities.

2. Cost Savings:

Reduces costs associated with environmental degradation and health impacts.

Promotes energy efficiency and the sustainable use of resources, leading to lower operational costs.

3. Market Opportunities:

Creates new markets for sustainable products and services.

Encourages businesses to adopt sustainable practices, enhancing their competitiveness and reputation.

Summary: Sustainable development ensures long-term economic stability by promoting activities that do not deplete resources and fostering innovation in green technologies, creating new job opportunities. It also leads to cost savings by reducing expenses related to environmental degradation and health impacts, and by promoting energy efficiency and sustainable resource use. Additionally, it opens up new market opportunities for sustainable products and services, while encouraging businesses to adopt sustainable practices, enhancing their competitiveness and reputation.

Contribution to Global Goals

1. Achievement of the United Nations Sustainable Development Goals (SDGs):

Aligns with global efforts to end poverty, protect the planet, and ensure prosperity for all by 2030.

Supports international cooperation and partnerships to address global challenges.

2. Peace and Stability:

Addresses root causes of conflict such as poverty, inequality, and environmental degradation.

Promotes inclusive and sustainable societies, contributing to global peace and stability.

3. Intergenerational Responsibility:

Ensures that future generations inherit a planet that is healthy, productive, and capable of supporting their needs.

Encourages a sense of responsibility and stewardship towards the environment and society.

Sustainable development is a holistic approach that integrates economic, social, and environmental dimensions. It is essential for ensuring the long-

term health and prosperity of our planet and its people, fostering a more equitable, resilient, and sustainable future.

Summary: Sustainable development aligns with the United Nations Sustainable Development Goals (SDGs) by working to end poverty, protect the planet, and ensure prosperity for all by 2030. It fosters international cooperation to tackle global challenges and contributes to peace and stability by addressing the root causes of conflict, such as poverty, inequality, and environmental degradation. Additionally, it emphasizes intergenerational responsibility, ensuring that future generations inherit a healthy and productive planet. This holistic approach integrates economic, social, and environmental dimensions to create a more equitable, resilient, and sustainable future.

Link Between Ecology and Eco-Tourism

Eco-tourism is closely connected to ecology, as it focuses on sustainable travel practices that support the conservation of natural environments and the well-being of local communities. Here's a brief overview of their link:

1. Promoting Conservation
    Education: Eco-tourism raises awareness among tourists about the importance of preserving natural habitats and ecosystems.
    Financial Support: Revenue from eco-tourism is often reinvested into conservation projects and protected areas, ensuring the maintenance and restoration of biodiversity.
2. Sustainable Practices
    Low Impact: Eco-tourism encourages activities that minimize environmental impact, such as guided nature walks and wildlife observation.
    Eco-Friendly Facilities: Use of sustainable infrastructure, such as eco-lodges and renewable energy sources, reduces the ecological footprint of tourism.
3. Community Engagement
    Local Benefits: Eco-tourism supports local economies by creating jobs and promoting local culture and traditions, leading to community-driven conservation efforts.
    Empowerment: Involving local communities in tourism management ensures that they benefit from and are motivated to protect their natural resources.

Eco-tourism leverages ecological principles to create a sustainable tourism model that benefits both the environment and local communities, fostering a deeper appreciation and stewardship of natural resources.

Summary: Eco-tourism supports conservation and sustainable practices while engaging local communities. It raises awareness, minimizes environmental impact, and provides economic benefits, fostering a sustainable relationship between nature and tourism.

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THE IMPACT OF IOT (INTERNET OF THINGS) TECHNOLOGIES ON ENVIRONMENTAL MONITORING

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ABSTRACT

The purpose of IOT is to allow things to be connected anytime, anywhere, to everything and to anyone ideally using any network and any service.

The impact of the Internet of Things (IoT) on environmental monitoring is substantial and is transforming the way we measure and manage environmental quality. IoT involves the use of advanced sensors and networked devices that collect real-time data from the environment. This data can be analyzed to predict and prevent pollution, as well as to help conserve biodiversity and natural resources.

For example, IoT sensors can be deployed in different areas to monitor air, water, and soil quality. They can detect high levels of pollutants such as nitrogen dioxide, carbon dioxide or heavy metals. This information can be used to inform the public and take timely corrective action.

Also, IoT helps in monitoring climate change and its impact on the environment. By collecting data from widely distributed sensors, accurate models can be created that predict weather changes and their impact on different ecosystems.

Overall, IoT is helping to create "SMART" cities and communities that are more sustainable and less affected by pollution and environmental degradation. This technology provides a powerful tool to protect the environment and ensure a better future for future generations.

1. Introduction

IoT-based environmental monitoring leverages Internet of Things (IoT) technology to gather data on various environmental factors, such as air quality, temperature, and humidity levels. This data can be analyzed to gain a deeper understanding of both indoor and outdoor conditions, enabling businesses to make informed decisions on how to mitigate negative environmental impacts. It can also guide companies in adjusting their operations to support sustainability and protect the local community or the planet.

These IoT systems help identify environmental issues that are often overlooked, normalized, or unnoticed. By detecting these challenges, businesses can take proactive measures to reduce their environmental footprint while safeguarding the well-being of employees, visitors, and the wider community.

In the field of environmental monitoring, IOT technologies [1] have been heavily felt. The governments and industries can identify harmful substances, chemical spills and dangerous pollutants through using connected devices as well as sensors [2]. This way, we are able to purify and protect and save our air, land and water resources using these IOT solutions. In addition, IOT sensors assist in perfecting operations thus aiding positive ecological impact leading to a sustainable future.

There are four key steps in IoT-based environmental monitoring [3] :

Observation (Monitor the Environment and Collect Data)

The first step is to observe the environment and gather data through IoT sensors. These devices measure factors like air quality, temperature, and humidity. The data collected is then transmitted to a central hub, where it can be reviewed in real time or analyzed offline. This step may reveal unexpected patterns or variances, such as high CO2 levels in crowded offices leading to drowsiness or discomfort, which could also apply to public spaces like bars and restaurants where unseen environmental factors affect the experience.

Analysis (Measure and Interpret Data)

The next step involves analyzing the collected data. This includes identifying trends, correlations between environmental variables, and any relationships between indoor and outdoor metrics. By looking at the data over time, businesses can spot issues such as chemical leaks, air pollution, or changes in environmental conditions that may

impact their operations. This analysis helps businesses assess their environmental footprint and make informed decisions about reducing their impact. For some businesses, this might be about improving employee comfort, while for others, it could be related to safety and compliance, such as detecting harmful pollutants in waste or water systems.

2. Storage (Catalogue Data for Future Use)

After analysis, the data needs to be stored for future reference. IoT systems typically store this data in secure cloud-based databases, enabling easy access and long-term tracking of environmental metrics. This stored data can help businesses monitor how their environmental impact evolves over time. Large-scale databases, such as the Microsoft Planetary Computer, aggregate global environmental data, though not all systems are as expansive.

Action (Provide Actionable Insights and Implement Solutions)

The final step is to use the insights gained from the data to take action. IoT environmental monitoring systems provide businesses with recommendations on how to reduce their environmental footprint, such as switching to renewable energy sources or adopting water conservation practices. These actionable insights might lead to operational changes, the adoption of new technologies, or even adjustments to a company's overall business strategy to promote sustainability.

3. Environmental Monitoring and IOT

Environmental monitoring [4] refers to the methods and tools used to observe and assess the quality of an environment by defining key environmental parameters. The primary goal is to accurately measure and quantify the impact of human activities or natural events on the environment. Data collected through monitoring is analyzed using statistical methods and then compiled into reports, such as risk assessments and environmental impact assessments, to evaluate potential risks and inform decision-making. Environmental monitoring involves the processes and activities used to assess the quality and state of the environment.

There are several key types of environmental monitoring [5]:

- **Air Quality Monitoring**: Measures pollutants in the air to assess their impact on human health and the environment.
- **Water Quality Monitoring**: Involves testing water sources for contaminants to ensure they are safe for consumption and ecosystem health.
- **Soil Monitoring**: Examines soil for pollutants and assesses its health and fertility.
- **Biodiversity Monitoring**: Tracks the health and diversity of ecosystems and species populations.

These monitoring activities help in making informed decisions to protect the environment and public health. Environmental monitoring and the Internet of Things (IoT) are closely connected [6] through the use of sensors and connected devices to collect and analyze environmental data in real-time. Here's how they work together [7]:

- **Sensors and Devices**: IoT-based environmental monitoring uses various sensors [8] to measure parameters like air quality, water quality, soil moisture, temperature, and humidity. These sensors can be deployed in urban areas, forests, oceans, and industrial sites.
- **Data Collection**: The sensors continuously collect data and transmit it to a central database or cloud platform. This data can include pollutant levels, weather conditions, and other environmental factors.
- **Real-Time Monitoring**: IoT enables real-time monitoring, allowing for immediate detection of environmental changes or hazards. This can help in early warning systems for natural disasters like floods, wildfires, and hurricanes.
- **Data Analysis and Insights**: The collected data is analyzed using advanced algorithms and machine learning to identify patterns, trends, and anomalies. This analysis helps in making informed decisions for environmental protection and management.
- **Automated Responses**: IoT systems can be programmed to trigger automated responses based on the data collected. For example, if a sensor detects a high level of pollutants in the air, it can automatically alert authorities or activate air purification systems.
- **Remote Accessibility**: IoT allows for remote monitoring and control, making it possible to manage environmental monitoring systems from anywhere in the world.

By integrating IoT with environmental monitoring, we can achieve more efficient, accurate, and timely data collection and analysis, ultimately leading to better environmental management and protection.

2.1 Air quality monitoring

Air pollution has been a persistent and growing issue, posing significant risks to both human health and the environment. To effectively mitigate these risks, there is a pressing need for a reliable and

efficient air pollution monitoring system. An IoT-based air pollution monitoring system [9], [10] offers an ideal solution by providing real-time data and insights on air quality in specific areas. IoT is revolutionizing air quality monitoring by providing real-time, accurate, and comprehensive data on air pollutants. These systems work as follow:

- **Deployment of Sensors**: IoT-based air quality monitoring systems use a network of sensors placed in strategic locations such as roadsides, industrial areas, and public spaces. These sensors measure various pollutants like CO2, NO2, PM2.5, PM10, and volatile organic compounds (VOCs).
- **Data Collection**: The sensors continuously collect data on air quality parameters. This data includes pollutant concentrations, temperature, and humidity.
- **Data Transmission**: The collected data is transmitted in real-time to a central database or cloud platform using wireless communication technologies like Wi-Fi, cellular networks, or LoRaWAN [11].
- **Data Analysis**: Advanced algorithms and machine learning models analyze the data to identify trends, patterns, and anomalies. This analysis helps in understanding the air quality dynamics and predicting future pollution levels.
- **Alerts and Notifications**: If the air quality drops below a certain threshold, the system can trigger alerts and notifications to inform authorities and the public about potential health risks.
- **Visualization**: The analyzed data is often visualized on dashboards, maps, and mobile apps, making it accessible and understandable for users. This helps in making informed decisions and taking timely actions.
- **Integration with Smart City Infrastructure**: IoT air quality monitoring systems can be integrated with other smart city infrastructure [12], [13], such as traffic management systems and public health networks, to create a holistic approach to urban management.

By leveraging IoT, air quality monitoring becomes more efficient, scalable, and responsive, ultimately contributing to better environmental management and public health protection.

In Albania we have Air **Monitoring Stations**: There are several air quality monitoring stations across the country, including in major cities like Tirana and Vlora. These stations continuously collect data on various air pollutants. In partnership with the Municipality of Tirana, Vodafone Albania [14] has launched a system to monitor and share air quality data with the public. Leveraging our IoT technology, smart air quality sensors have been deployed throughout the city, providing real-time air quality information through the 'Tirana Ime' app. This initiative enables the municipality to gain deeper insights into traffic-related pollution and take targeted actions to address environmental concerns. Since April 2018, as part of the Green Lungs project funded by the European Union, Milieukontakt Albania [15] and Co-Plan have been monitoring air quality at 84 different stations across Tirana. This monitoring initiative will expand over the next two years to cover nearly the entire area within Tirana's Grand Ring. The air quality data is collected using the Aeroqual Series 500, a device that provides real-time air quality monitoring as an alternative to traditional methods.

2.2 Water quality monitoring

Water is a vital resource, and as populations grow and climate change intensifies, effective conservation and management are becoming more urgent. IoT-driven water monitoring systems [16] are transforming how we track and manage water usage, providing an innovative solution to enhance efficiency and promote sustainability. IoT is significantly enhancing water quality monitoring by providing real-time, accurate, and comprehensive data on various water parameters.

Water quality monitoring amkes use of the following components to function:

- **Deployment of Sensors**: IoT-based water quality monitoring systems use a network of sensors placed in water bodies such as rivers, lakes, and reservoirs. These sensors measure parameters like pH, temperature, dissolved oxygen, turbidity, and conductivity.
- **Data Collection**: The sensors continuously collect data on water quality. This data includes information on pollutants, chemical composition, and physical properties of the water.
- **Data Transmission**: The collected data is transmitted in real-time to a central database or cloud platform using wireless communication technologies like Wi-Fi, cellular networks, or LoRaWAN [17].
- **Data Analysis**: Advanced algorithms and machine learning models analyze the data to identify trends, patterns, and anomalies. This analysis helps in understanding the water quality dynamics and predicting potential pollution events.
- **Alerts and Notifications**: If the water quality drops below a certain threshold, the system can trigger alerts and notifications to inform

authorities and the public about potential health risks.
- **Visualization**: The analyzed data is often visualized on dashboards, maps, and mobile apps, making it accessible and understandable for users. This helps in making informed decisions and taking timely actions.
- **Integration with Other Systems**: IoT water quality monitoring systems can be integrated with other environmental monitoring systems and smart city infrastructure to create a holistic approach to environmental management.

By leveraging IoT, water quality monitoring becomes more efficient, scalable, and responsive, ultimately contributing to better environmental management and public health protection.

In Albania, water quality monitoring is conducted to ensure the safety and sustainability of water resources. Here are some key aspects of water monitoring in the country:

- **Surface Water Monitoring**: This includes monitoring the quality of rivers, lakes, and coastal waters. Parameters such as pH, turbidity, temperature, and dissolved oxygen are regularly measured.
- **Groundwater Monitoring**: Groundwater quality is assessed to ensure it meets safety standards for drinking and agricultural use.
- **EU Water Framework Directive (WFD)**: Albania is working to align its water monitoring practices with the EU WFD, which involves comprehensive monitoring of ecological and chemical status of water bodies.
- **River Basin Management Plans**: These plans are developed to manage water resources at the river basin level, ensuring sustainable use and protection of water bodies.
- **Coastal Monitoring**: Monitoring stations are established along the coast, particularly in popular beach areas like Velipoja, Shëngjini, Durrës, and Vlora, to assess water quality and ensure safe recreational waters.

These efforts are part of broader initiatives to improve water quality and management in Albania, supported by international organizations and aligned with EU standards. One important project in Albania is AquaNEX [18], which addresses the challenges of WFD application and water resources management in the CB area. Albania needs to apply the WFD to enable water resources protection and sustainable management, and also support its accession to EU. The main outputs of the project include: identification of river basins in Albania, a surveillance monitoring guide for Albanian water bodies, a water quality monitoring dataset for pilot areas, a library of satellite images, a high-resolution elevation model, a soil characteristics dataset, a geodatabase, a soil hydrophobicity model, a guide on standard methodologies for priority substances, the development of an e-platform, training seminars, a guide for aligning Albanian legislation with the Water Framework Directive (WFD), a guide linking Earth observation tools to the WFD, and public engagement activities. All residents of Albania will benefit from the promotion of legislative alignment with the WFD.

2.3 Energy monitoring

Energy monitoring involves the continuous tracking, measurement, and analysis of energy consumption across buildings, facilities, or systems [19]. By utilizing advanced hardware and software solutions, it collects, processes, and visualizes detailed data on energy usage patterns over time. The main goal is to gain in-depth insights into energy consumption trends, identify inefficiencies, and uncover opportunities for potential savings. Here's a breakdown of how it works and its connection to IoT:

What is Energy Monitoring?

- **Real-time Data Collection**: Energy monitors collect real-time data on energy usage, providing insights into how much energy is being consumed at any given moment.
- **Data Analysis**: The collected data is analyzed to identify patterns and inefficiencies, helping to understand which devices or systems are consuming the most energy.
- **Visualization**: Advanced software solutions visualize the data, making it easier to interpret and act upon.
- **Cost Savings**: By identifying energy wastage, energy monitoring can help reduce energy bills and improve overall efficiency.
- **Environmental Impact**: Reducing energy consumption also helps in lowering the carbon footprint, contributing to environmental sustainability.
- Connection with IoT

In a time when sustainability and efficiency are paramount, the role of the Internet of Things (IoT) in energy management and monitoring [20], [21] is crucial. By leveraging IoT technology for energy monitoring, organizations can achieve substantial cost savings, enhance operational efficiency, and reduce their environmental impact. The Internet of Things (IoT) enhances energy monitoring by integrating smart devices and sensors that collect and transmit data in real-time. Here's how IoT

plays a crucial role:
- **Real-time Monitoring**: IoT devices continuously monitor energy usage and transmit data to a central system. This allows for real-time tracking and immediate detection of anomalies.
- **Data Analysis and Insights**: IoT systems use advanced analytics to process the collected data, providing valuable insights into energy consumption patterns and identifying areas for improvement.
- **Automation**: IoT enables automation of energy management processes. For example, smart thermostats can adjust heating and cooling based on occupancy, and smart lighting systems can turn off lights when rooms are unoccupied.
- **Remote Control**: IoT allows for remote control of energy-consuming devices, enabling users to manage their energy usage from anywhere.
- **Predictive Maintenance**: IoT sensors can predict equipment failures by monitoring performance metrics, helping to prevent downtime and reduce maintenance costs.

By leveraging IoT [22], energy monitoring systems become more efficient, accurate, and user-friendly, leading to significant cost savings and environmental benefits.

3. Conclusion

The impact of IoT is transformative, enabling smarter, more efficient, and sustainable solutions across various sectors, from energy and water management to healthcare and transportation. An IoT-based environmental monitoring system offers several key benefits:
- **Enhanced Environmental Understanding**: By providing real-time data through remotely deployed IoT sensors, businesses and organizations gain a clearer, more accurate understanding of their environmental conditions. This enables them to take targeted actions to reduce environmental impact or quickly address issues like excessive CO2 levels, noise, or airborne chemicals as they arise.
- **Increased Efficiency**: Real-time data allows organizations to detect and address potential problems before they escalate. With the help of warning alarms, businesses can act both reactively and proactively, improving operational efficiency, enhancing the working environment, and reducing downtime—all while saving costs

- **Boosted Sustainability**: IoT environmental monitoring systems help organizations identify areas where they can reduce their environmental impact, fostering long-term sustainability. This benefits not only employees and stakeholders but also the broader community and ecosystem.
- **Support for Business Growth**: Compliance with environmental standards is essential for many companies, helping them demonstrate to customers that they align with progressive values and are committed to sustainability. By offering evidence-based systems and results, businesses can build trust, ensuring that their environmental measures align with both their internal goals and customer expectations.

Acknowledgment

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Students presentation session 5

ID: 026

DIGITAL FRONTIERS: EXPLORING E-BUSINESS, E-GOVERNMENT, E-LEARNING AND E-COMMERCE

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ABSTRACT

The aim of this paper is to examine e-Business, e-Government, e-Learning and e-Commerce and their implementation in the ever evolving society. This paper delves into the multifaceted landscape of digital frontiers, examining the intersections of e-Business, e-Government, e-Learning and e-Commerce. In the realm of e-Business, digital technologies have revolutionized traditional business models, fostering connectivity, efficiency, and innovation. Similarly, e-Government initiatives leverage digital platforms to enhance transparency, citizen engagement, and service delivery. The domain of e-Learning witnesses a paradigm shift in education, offering flexible, personalized learning experiences through digital tools and resources. Meanwhile, e-Commerce transforms consumer behavior and market dynamics, providing convenience and diversity through online platforms and mobile solutions. This paper explores the implications, challenges, and opportunities inherent in these digital frontiers. It addresses cybersecurity threats, digital literacy gaps, and regulatory complexities, emphasizing the need for collaborative solutions. By fostering innovation, digital literacy, and inclusive ecosystems, stakeholders can navigate these challenges and unlock the transformative potential of digital technologies. Through case studies and analysis, the paper offers insights into best practices and strategies for leveraging digital frontiers for sustainable socio-economic development. Ultimately, this paper contributes to the discourse on digital transformation, highlighting the importance of embracing technological advancements while addressing associated challenges. By understanding and harnessing the power of e-Business, e-Government, e-Learning, and e-Commerce, individuals, organizations, and societies can thrive in the digital age.

Key Words: e-Business, e-Government, e-Learning, and e-Commerce, intersections, collaborative solutions.

1. Introduction

New times call for innovation and advancements, it is a part of the process of evolution. In the wake of the digital age the humanity has developed tools and manners to make the tasks (and life) easier by digitalizing most of the (traditional) processes such as learning, businesses and commerce, government institutions, thus transforming them into e-learning, e-business, e-commerce and e-government. As a result, these innovations have not only streamlined operations but have also fostered greater accessibility and efficiency across various sectors. The rise of e-learning has revolutionized education, making knowledge more accessible than ever before. E-business and e-commerce have reshaped how transactions are conducted, enabling companies to reach global markets with unprecedented ease. Meanwhile, e-government initiatives have enhanced transparency and citizen engagement, improving public services through digital platforms. However, this transformation has not come without challenges. Issues such as data security, digital divide, and the need for regulatory frameworks require careful consideration. In this context, understanding the implications of these advancements becomes crucial as we navigate the complexities of a rapidly evolving digital landscape. This paper explores the profound impact of digitalization on these sectors, examining both the opportunities and challenges it presents as well as sharing my and my colleagues personal experience with it. By analyzing the current trends and future directions, we aim to provide insights

into how societies can adapt and thrive in this new era of innovation.

2. E-business and e- commerce

Electronic commerce (E-commerce) refers to using the Internet and other networks (e.g., intranets) to purchase, sell, transport, trade data, goods, or services[18]. Electronic commerce is often confused with electronic business. What is the difference? – Electronic business (E-business) refers to a broader definition of e-commerce, not just the buying and selling of goods and services, but, also the conducting of all kinds of business online - such as servicing customers, collaborating with business partners, delivering e-learning, and conducting electronic transactions within organizations. However, others view the e-business only as comprising those activities that do not involve buying or selling over the Internet, such as collaboration and intrabusiness activities. The distinction between e-business and e-commerce is essential for understanding the full scope of digital transformation in the business world. E-commerce is a subset of e-business, focusing primarily on the transactional aspect, involving direct interactions between buyers and sellers. It encompasses a variety of models, including Business-to-Consumer (B2C), Business-to-Business (B2B), Consumer-to-Consumer (C2C), and Consumer-to-Business (C2B). **Business-to-Consumer (B2C)** e-commerce involves transactions between businesses and individual consumers. Online retailers like *Amazon* and *Alibaba* have revolutionized the retail landscape by providing consumers with unprecedented access to a wide range of products and services. The convenience of online shopping, coupled with secure payment methods and efficient delivery systems, has significantly influenced consumer behavior and expectations. **Business-to-Business (B2B)** e-commerce involves transactions between businesses. This model includes supply chain management, wholesale transactions, and procurement processes. B2B platforms like *Alibaba* and *ThomasNet* enable businesses to source products, negotiate terms, and manage orders electronically, enhancing efficiency and reducing operational costs. **Consumer-to-Consumer (C2C)** e-commerce involves transactions between consumers, typically facilitated by third-party

platforms like eBay and Craigslist. These platforms provide a marketplace for individuals to buy and sell goods and services directly, often featuring auctions, peer reviews, and secure payment systems. **Consumer-to-Business (C2B)** e-commerce is a relatively new model where individuals sell products or services to businesses. Examples include freelance platforms like **Upwork** and **Fiverr**, where individuals offer their skills and services to businesses on a contractual basis.

Technological advancements have been the driving force behind the evolution of e-business and e-commerce. Cloud computing, big data analytics, artificial intelligence (AI), and the Internet of Things (IoT) have enabled businesses to streamline operations, enhance customer experiences, and innovate continuously.

Cloud computing provides scalable and flexible IT resources, allowing businesses to manage their operations more efficiently. Big data analytics helps companies gain insights into consumer behavior, optimize supply chains, and improve decision-making processes. AI and machine learning algorithms facilitate personalized marketing, chatbots, and automated customer service, enhancing user engagement and satisfaction. IoT connects devices and systems, enabling real-time tracking and management of inventory, logistics, and other business processes[19].

3. E-Government

E-government refers to the use of information technology and communication (ITC) in general, and e-commerce in particular, to improve the delivery of government services and activities in the public sector, such as providing citizens with more convenient access to information and services and providing effective delivery of government services to citizens and busi nesses as well as improving the performance of government employees[20]. It is also an efficient and effective way for governments to interact with citizens, businesses, and other entities and to improve governmental business transactions (such as buying and selling goods and services) and to operate effectively within the governments themselves. E-government includes a large number of activities. E-government includes the following major

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19 Ferencz, J., J. López González and I. Oliván García (2022), "Artificial Intelligence and international trade: Some preliminary implications", *OECD Trade Policy Papers*, No. 260, OECD Publishing, Paris, https://doi.org/10.1787/13212d3e-en. Accessed on 27.05.2024

20 OECD (2003), *The e-Government Imperative*, OECD e-Government Studies, OECD Publishing, Paris, https://doi.org/10.1787/9789264101197-en. Accessed on 27.05.2024

categories: government-to-citizens (G2C), government-to-business (G2B), government-to-government (G2G), internal efficiency and effectiveness (IEE), and government-to-employees (G2E). Governments seek to automate their interactions with businesses. Although we call this category government-to-business (G2B), the relationship works in two ways: government-to-business and business-to-government. Thus, G2B refers to activities where the government sells products to businesses or provides businesses with services and vice versa. Two key G2B activities are e-procurement and the auctioning of government surpluses. The government-to-citizens (G2C) category includes all the interactions between a government and its citizens that take place electronically. G2C can involve dozens of different initiatives. The basic idea is to enable citizens to interact electronically with the government from anywhere and at any time. G2C applications enable citizens to ask questions of government agencies and receive answers, pay taxes, receive payments and documents and schedule services, such as employment interviews and medical appointments. Governments are just as interested, as private sector organizations, in providing services and information electronically to their employees. Government-to-employees (G2E) applications refer to e-commerce activities between the government and its employees. Such activities may be especially useful in enabling efficient e-training of new employees, e-learning for upgrading skills, and communication and collaboration activities. Other typical services are e-payroll, e-human resource management and e-recruiting.

4. E-Learning

Due to the COVID-19 pandemic, education has significantly changed. The global pandemic has drastically changed the way students are learning worldwide and thus distinctive online learning has taken place. Students from all around the world have suddenly shifted from classroom learning to online learning. All educational activities have shifted digitally. It came suddenly and required immediate actions, activities and costs (for parents) - (tools - notebooks, unlimited internet access, educational e-platforms) and most demanding and challenging for all of us (students and professors) – **digital literacy[21]**.

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[21] **European Commission, Digital Education Action Plan (2021-2027), September 2020.**
https://education.ec.europa.eu/focus-topics/digital-education/action-plan
Accessed on 28.05.2024

The e-learning that (until then) was seen as an experimental or optional educational model, suddenly, became a new reality, although not mandatory, but, obviously – necessary and unavoidable.

E-learning, also known as electronic learning, is a form of education or coaching that utilizes electronic devices and digital platforms to deliver educational or coaching content. It involves the use of technology to access learning materials, engage in interactive activities, and participate in virtual classrooms. This pattern has gained popularity due to its flexibility, accessibility, and cost-effectiveness, allowing learners to acquire knowledge and skills remotely and at their own pace. The possibilities are endless with e-learning and its tools. Nevertheless, it will be characterized by immersive and personalized experiences, thanks to advancements in Artificial Intelligence (AI) and Virtual Reality (VR). Intelligent tutoring systems will analyze learner data and provide tailored content and guidance to meet individual needs. VR will transport learners to virtual environments, allowing them to engage with realistic simulations, enhancing engagement and knowledge retention.

Adaptive learning algorithms will play a significant role in e-Learning, enabling the delivery of personalized content and assessments. These algorithms will continuously analyze learner progress, preferences, and learning styles to dynamically adjust the learning path. Learners will receive targeted recommendations and interventions, ensuring that they receive the most relevant and effective educational and coaching content.

Encouraging collaboration and social interaction is crucial for effective e-Learning. Businesses should implement collaborative platforms, discussion forums, and online communities to facilitate peer-to-peer learning, knowledge sharing, and networking opportunities. Collaborative learning enables learners to engage in meaningful discussions, exchange ideas, and work together on projects. Social learning promotes a sense of community, encourages active participation, and enhances the overall learning experience.

The integration of Augmented Reality (AR) will revolutionize e-learning by overlaying digital content onto the real world. Learners will be able to interact with virtual objects and environments, making abstract concepts more tangible and enhancing understanding. AR will bring textbooks and learning materials to life, transforming them into interactive and immersive experiences.

My generation has grown up with video games where tasks, levels, challenges and immediate feedback are the rules. Those rules are completed with rewards, competition, rankings and interaction with other gamers. When we were children, we

probably had the impression that school was much more boring than playing with their friends. Gamification is the best way to attract and retain our attention in a real or virtual classroom. The technologies that are available today offer a wide range of opportunities to motivate and to engage us, and above all to help us become active learners. Gamification is also a challenge for the faculty members since it is not just about games. The modern universities should detect the needs and skills of the new generation of students and have to set the learning objectives as in a more traditional approach. The content has to be there, gamification and technology are just new ways to deliver it. No doubts, gamification elements will be widely incorporated into e-Learning, making it more engaging and enjoyable. By introducing game-like mechanics, such as points, badges, and leaderboards, learners/students will be (more) motivated to actively participate and progress through their educational journey. Gamification will create a sense of achievement, foster healthy competition, and encourage self-directed learning.

Managers generally use what is known as a content management system (CMS) to build and store digital content in many institutes and schools. Lately, the concept of CMS for study materials has extended globally to e-Learning platforms, as a Learning Management System (LMS). An LMS is beneficial for professors and other e-Learning universities who can now (easily) design, document, and register courses and study materials within. In a technology-based and digitalized world, e-Learning plays a big role. Users can go digital and study required courses online. Leveraging the capabilities of an LMS, organizations are creating lesson plans and managing courses easily, thus doing away with the old analog ways thanks to LMSs.

In the future, e-Learning will embrace microlearning, focusing on delivering content in bite-sized modules. Learners/students will have access to short, targeted lessons that can be easily consumed, even in limited timeframes. Microlearning enables learners to acquire knowledge in small increments, enhancing retention and allowing for more flexible learning schedules. The professors have found that breaking study material into modules (might) produce smarter and faster retention. For instance, two-hours durable lecture can be divided into four 30-minute sessions. Microlearning is demonstrative of a movement that goes beyond e-Learning into the domain of traditional classroom areas. The future of e-Learning will emphasize lifelong learning and continuous upskilling. As technology evolves and new skills emerge, individuals and businesses will need to adapt and acquire new knowledge. The e-Learning platforms will offer a wide range of courses and programs, including professional coaching to support entrepreneurial or business development, allowing individuals to stay relevant in a rapidly changing job market.

5. The advantages of online learning

The e-Learning includes all the advantages of the comparatively new form of education known as distance learning. There are multiple advantages of being able to learn from anywhere, where students also have: flexibility with regard to timings, access to a variety of courses, no transport hassles, can learn at their own pace, lower costs. Some recent survey (Eurostat, 2023.)[22], found that there is an increase in online education. In 2023, 30% of EU internet users, aged 16 to 74, reported that they had done an online course or used online learning material in the three months prior to the survey. This is a 2 percentage point increase compared with 2022 (28%). Among all EU members, the Netherlands had the highest share (54%) of internet users doing an online course or using online learning material, followed by Finland (53%), Sweden (48%), Spain (47%) and Estonia (45%). At the other end of the scale, doing online courses or using online learning material was not very common in Romania (10%), Cyprus (16%), Bulgaria and Greece (both 17%) and Poland (18%). We can (only) assume that there will be growing trend in near future for online lectures, courses, workshops, webinars. That is, at least, an assumption or better to say, from student point of view – a wishful thinking.

But…

Are we (indeed) convinced that being at home with our cells phones (following online courses/lectures) is easier and more efficient for us, instead of attending the lectures on spot, at the amphitheaters, admiring the performances of our professors who are tremendously trying to transfer their knowledge and advices to us – using all their verbal and not verbal techniques and skills (explaining, guiding, illustrating, demonstrating, asking and answering questions) – just to be assured that the students got the message?! Is our comfort zone, at home, really better option than being at the faculty, chatting and mingling with our colleagues and other students?! I am not (yet) assured.

I could only suggest recording "short guest-lecture videos to let students hear from another expert in certain field". Students may also be able to solidify their understanding by explaining course concepts to one another. Even, like a student, I am aware

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[22]   https://ec.europa.eu/eurostat/web/products-eurostat-news/w/ddn-20240124-2

Accessed on 26.05.2024

how challenging for professors is to get our attention. Any educator or trainer will (probably) tell you: it's hard to get students' attention…with distractions coming from cell phones, computers and other devices. Consequently, a war is being waged in classrooms around the world. The rules of the game have changed; students just aren't the same; the teachers of tomorrow can either fight technology…or use it to their advantage. These technologies have many advantages. They foster a great deal of curiosity so why not use them to get students' attention and get them involved in class? Explaining to a student what a production line looks like is one thing; being able to show him or her - via a virtual reality headset - is a whole different thing.

6. Tendencies in south east europe

Some experts consider that South-Eastern Europe is doing well compared to the rest of the world. However, certain challenges remain ahead. For instance, as the experts observe, only certain age group (15-25 age) of the entire population within the Region have intermediate digital skills. Advanced digital skills are with university graduates or digital technology sectors workers. Urgent areas needing increased skills include: Teacher training, practical digital literacy for technical and vocational education, increased digitalization in education. Companies should focus on employee reskilling and upskilling. Utilizing workforce planning tools and predictive analytical models is key to plan for talent acquisition[23].

7. Limitations and recommendations

Limitations. No doubt, the attitudes exposed in this paper might be considered slightly biased, based mostly on the personal experiences and wishful thinking. It gives a partial (instead of comprehensive) approach, by not taking in to account the all aspects and situations that might happen in real life. The intention here is to be vocal and visible in order to awake the public for the (digital) needs of the nowadays students, but, honestly – could it be an e-learning for all professions (for example – the surgerists, dentists, policemen)?! Regarding the technology - the one of the biggest limitations of the digital structured world is the digital divide, thus worsening the inequalities in access to digital goods and services. Another limitation is the widespread of

the newest technologies such as great internet connections, antennas and installations. The most affected are the rural regions, sadly, however they are the ones that can see the biggest benefits of e-commerce, e-business, e-government and e-learning. Additionally, cybersecurity threats pose significant challenges, with risks ranging from data breaches to identity theft. Regulatory complexities and a lack of standardized frameworks also hinder seamless integration across borders and sectors, leading to inconsistencies in implementation and enforcement. Lastly, the rapid pace of technological advancement often outstrips the ability of educational and training systems to equip individuals with necessary digital literacy skills, leaving a gap in the workforce's ability to leverage these technologies effectively. While e-business and e-commerce offer numerous benefits, they also present several challenges. Cybersecurity threats, such as data breaches and hacking, pose significant risks to businesses and consumers. Ensuring robust security measures and compliance with data protection regulations is crucial. Additionally, digital literacy gaps among consumers and businesses can hinder the effective adoption of e-commerce and e-business practices.

Recommendations

Imagine a world in which a student from a rural region (maybe) unable to afford living in the university city, by focusing on the widespread of the newest technologies and shifting to a digital format of learning (e-learning), can (be allowed to) stay at home and cut costs significantly while receiving the same education as any other student. Furthermore, if the widespread of the technologies is worked upon citizens from the same areas can benefit from the tools of e-government by not having to wait in line when going for a medical checkup or while applying for documents and having to rely on hope to get the essential tasks done. Despite the challenges, the opportunities in e-business and e-commerce are immense. Businesses that embrace digital transformation can achieve greater efficiency, innovation, and competitiveness. Collaborative efforts among stakeholders, including governments, industry associations, and technology providers, are vital for creating a conducive environment for e-business and e-commerce growth. Finally, it might be considered as a constructive proposal to create a short-term benchmark manual, with concrete prompt measures and actions (things to do), like a synergy among the students, professors and the government. Intensive public debates (and papers) could significantly increase the awareness of the public and, thus, to make a soft pressure on the decision makers to

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[23] Ponder J. Setting the context: Digital skills in South-Eastern Europe (2021), accessed on 02.06.2024.
https://www.itu.int/en/ITU-D/Regional-Presence/Europe/Documents/Events/2021/Digital%20skills/01_Jaroslaw_Ponder.pdf

support such initiatives for improvement of the digital literacy within the society.

8. Conclusion

Our parents lived in a material world. My generation lives in a digital world. The digital technology is applied everywhere around us. It made our life simpler and more comfortable. In a way, it (probably) increased our quality of life. The education sector is a significant field of development of society, where the application of digital technology has increased significantly over the years. Still, there are modest signs of incorporating the tools of digital technology into our educational processes. We are learning about the traditional concepts and pillars of economy (and society), trying to implement in our real (digital) life and trying to become skillful for our future works either in big companies, banks, or simply starting own (online) business. It is an endless ocean with data, opportunities and challenges, and it is our task to learn how to swim and sail through those stormy (digital and virtual) waters. All these aspects, mentioned above, might lead us to possible conclusion that broader and comprehensive action is needed in order to make further progress in implementing all available digital tools in curriculla, thus, making it more attractive and exciting for the students. It requires a lot of segments (and factors) in society to be mobilized (or awaken) – a (political) will of the **government** for improving the digital literacy in the society; awareness and readiness of the **universities** to spark these processes, and furthermore, to be leaders in implementing them in their study programs: (big) companies who could/should organize and sponsor such courses (for elder people, for example, to educate them how to pay their bills online) etc. But, according to me, **the most crucial would be the willingness and the synergy between the professors and the students**, commonly and with flexibility, to trace the paths to offer and to show the bridges when the rest are seeing only obstacles and fog. In addition to these efforts, there should be a concerted push to integrate real-world applications and hands-on experiences into digital education to better prepare students for the complexities of the modern workforce. This can include partnerships with industries to provide internships, project-based learning opportunities, and exposure to cutting-edge technologies. Moreover, fostering a culture of innovation and entrepreneurship within educational institutions can empower students to not only adapt to but also drive technological advancements. This approach can help bridge the gap between theoretical knowledge and practical skills, ensuring that students are well-equipped to tackle real-world challenges. Furthermore, encouraging cross-disciplinary collaboration within educational programs can broaden students' perspectives and foster the kind of innovative thinking necessary for addressing the multifaceted issues of the digital age. Ultimately, by fostering a dynamic and inclusive digital education ecosystem, we can equip future generations with the tools and mindset needed to thrive in an increasingly complex and interconnected world.

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Students presentation- Session 6

ID: 030

ECONOMIC INTEGRATION: THE RESTRICTIONS AND CONSCIENCES OF THE PARTICIPANTS IN AN ECONOMIC ZONE: THE CASE OF GREECE, THE ECONOMY BEFORE JOINING THE EURO ZONE AND THE TRANSFORMATION.

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Abstract

This study investigates the financial conditions of the Greek economy for the period before joining the economic zone of the EU. We examine the actions taken by Greece to comply with the EU requirements. In addition, we will define how the economy evolved in the following years after its participation in the Eurozone and, the course of the Greek economy over the next decade. This research aims to present and discuss the privileges that an established economic zone like the Eurozone offers to its member states.

Keywords: Development-Growth, Economic Transformation, Economic Zone, European Union, Eurozone, Greece

1. Introduction

Economic integration is when different countries agree on common goals and cooperate to achieve them by following common policies between each other. Economic integration aims to reduce costs for both consumers and producers and to increase trade between the countries involved in the trading zone (KENTON, April 18, 2024)

The Eurozone consists of member states with common goals, interests, and subsequent benefits. Specifically, the eurozone aims to eliminate tariffs between member states setting common customs duties for third-party countries. There is also the free movement of human resources, the declaration of a common currency, and one Central Bank responsible for the monetary policy of Eurozone.

Although the period before joining the Eurozone, Greece had negative productivity rates and negative GDP growth, after joining the union it started to have positive growth rates and continuous

development.

2. Literature Review

Over time the orientation of the Greek economy is characterized by hardship and unique circumstances, some of them economic and some other political with most importantly the collapse of the dictatorship in 1974 after 7 years of being in power.

According to Patronis V., in the mid-1970s between the two oil crises Greece applied Keynesian policies dealing with the consequences of the international crisis. Although those policies were not always successful, showing weakness regarding the ability to rein in inflationary pressures, the increase in demand became the cornerstone element that put the economy back on track leading to relatively high growth rates until 1979 (Patronis, 2015)

Basley, A. underlines specific historical facts that caused the oil crisis. Firstly in 1973, the Arab state-members of the Organization of Petroleum Exporting Countries (OPEC) declared that they would cut oil production, to certain countries due to worldwide political events that had occurred at that time. After that, the USA left with limited oil supplies which contributed to the oil crisis in 1973-74, continuing to affect a vast number of economies around the globe, one of which was the USA, which raised oil from 2.2 million barrels per day in 1967 to 6 million barrels per day, impacting and creating worldwide cries, a matter that also affected Greece (Beasley, 2023).

According to Liargovas P. and Papazoglou E., in the next decades, Greece settled the path toward the economic zone of Europe. Chouliaras A., refers to three major transformations. Firstly, the negotiation of the country's accession in 1981 had a decisive

impact on the consolidation of the renovated democratic regime. Secondly, governance has been substantially affected by the transposition of institutional models such as administrative division and the transfer of responsibilities to decentralized bodies of administration, tackling maladministration, improving public services for the citizens, and the coordination of economic policies. Last but not least, the sustainability of the state, as advocated by the Europeanisation of the economic, infrastructure, and environmental policies (Liargovas and Papazoglou, 2023)

In addition, Sakellariou, A., states that socio-economic cohesion in the economic zone is its main objective in European regional policy. Its purpose is to support job creation, business competitiveness, economic growth, sustainable development, and the improvement of quality of life for citizens in the EU. It aims at solidarity between EU Member States for the convergence of regions and the reduction of development inequalities and, in general, their economic, social, and territorial differences (Sakellariou, 2023).

Moreover, Pagoulatos, G. points out that Greece gained from participating in the Eurozone, as the accession of Greece to the EU has been the most important factor for the country's sociopolitical, economic, and institutional modernization, gaining economic progress, prosperity, and integration in the international economic environment, also international integration and external security and lastly stabilization and deepening of democracy (Pagoulatos, 2002).

In 2008 one of the biggest financial crises of the modern era was caused after the collapse of the bank Lehman Brothers in the USA. Wiggins, R., Piontek, T., and Metrick, A., emphasize this case. On September 15, 2008, Lehman was the fourth-largest U.S. investment bank, with 25,000 employees worldwide declaring $639 billion in assets and $613 billion in debts. This crisis resulted in significant and wide losses for the real economy, estimated for the U.S. economy in trillions of dollars, possibly to over $10 trillion. One cause of Lehman's demise was its significant exposure to the U.S. subprime mortgage and real estate markets. When these markets started to slow down, they sparked a retraction in the "shadow banking system" for short-term loans as concerns about unknown exposures to securitized subprime mortgages spread to other types of assets. Lehman, like other investment banks, relied on short-term markets to raise billions of dollars. Ultimately, it was an inability to secure funding that was Lehman's undoing (Wiggins, Piontek, and Metrick, 2014).

3. Data and methodology

Research is based on the available literature and the data come from official statistics and historical facts.

3.1 The orientation of Greece's economy before becoming a part of the EU economic zone.

3.1.1 The orientation until 1990

The course of the Greek economy will be analyzed for different periods. The first period covers the decades of the 1970s until the end of the 1980s. More analytically, the study starts from the late 1970s, when Greece had high inflation rates due to two major factors. The first and most crucial one was the two worldwide oil crises of 1974 and 1979 which exploded inflation in many countries, combined with the second factor the political transition from a dictatorship to a democratic state (Kostis, 2016), (table 1). Therefore, after the political transition, Greece was oriented to industrial policies to develop and promote Greek products within the country and abroad.

Although these policies were expected to benefit the Greek economy, at the end the attempt was not successful. The aftermath of these actions was the devaluation of the national currency, the Drachma by 15.5 percent (table 2) while GDP was also fallen (table 3). However, in the late 1980s inflation started to fall (table 4) after a successful implementation of economic policies that stabilized the economy with a further fall of the Drachma by 15 percent, (table 5) having though some oscillations, before the stabilization of inflation in the early 1990, (table 6) (Kostis, 2016).
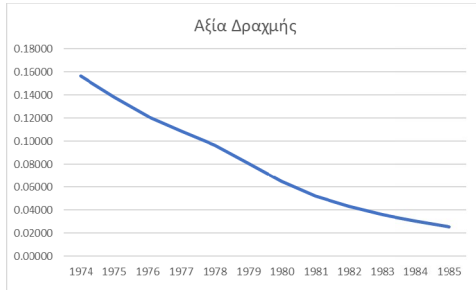
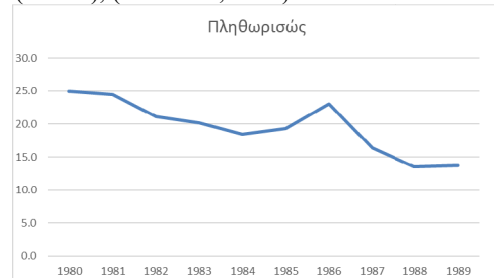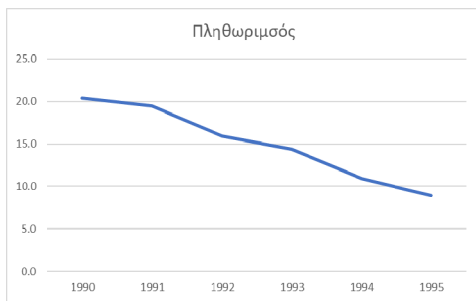(table 1), (Statistical, 2024)

(table 2),

(table 3), (GDP per capita, 2019)

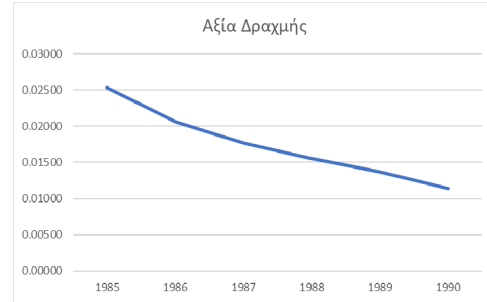(table 4), (Statistical, 2024)

(table 5),


(table 6), (Statistical, 2024)

(table 7)

3.1.2 The transformation of the economy on the constraints set by the European Union.

At the beginning of 1990s Greece had set the path towards the Eurozone. In 1992 European Council voted for the Treaty of Maastricht to set the specific conditions for the accession to the Eurozone. Firstly, the inflation should be at the rate of 2% annually, secondly, the public deficits should not be over 3% and thirdly, the debt should move towards 60% of GDP (European Council).

In conclusion, Greece like all other member states was obliged to apply the above-mentioned rules. The first aim was to face inflation, by contracting fiscal and monetary policies. The result of such policies was the fall of Drachma by 12 percent (table 7). At that time fiscal policy was important as anti-inflationary strategy, leading to a significant increase in both wages and prices in the country, (Bryant, Garganas, Tavlas, 2001), (table 8). With the adjustment of reforms, the following years Greece's economy began to recover, and from 1995 to 2000 the annual GDP grew by 3.2 percent (table 9) along with the trade, i.e. imports and exports (table 10), (table 11).
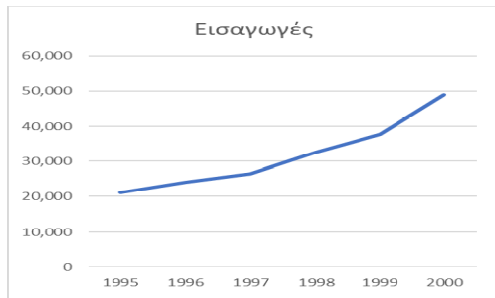
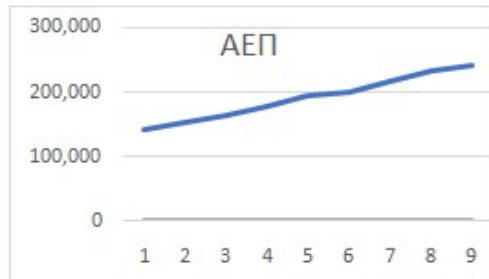(table 8), (Statistical, 2024)
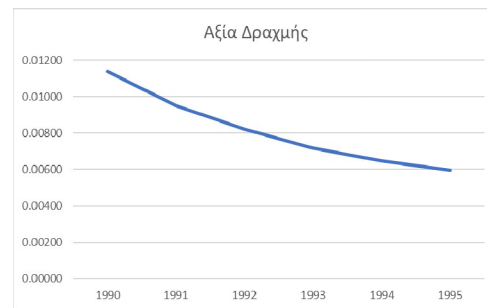
(table 9), (GDP per capita, 2019)
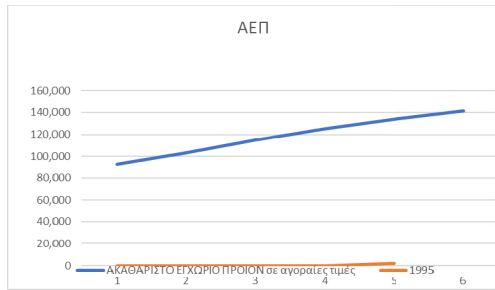
(table 10)

(table 11)

3.2 The joining into the economic zone and the evolution of Greece's economy.

Although the annual productivity of Greece in the period 1980 to 1994 was marginally negative, in the next five years until 2000 it increased annually by 2.2% much higher than the average increase of the EU, while investments approximately reached annually 7.3% of the GDP double the European average. In addition, Greece was based almost exclusively on its tourist services and shipping, (Bryant, Garganas, Tavlas, 2001).

Due to the significant changes and the developments of the economy, in 2000 Greece joined the Eurozone officially on January 1, 2001 and in 2002 the Euro currency started to circulate as a transactions' currency at a rate, 1 Euro= 340,75 Drachma, (40 years in the EU: Greece's accession to the euro., 2021)

Although Greece's future for the 2000s looked bright, with high GDP growth and almost zero inflation (table 12) from 3,4 percent to 4,2 percent, (table 13), a similar rise was noted by Greece's market. But a worldwide crisis started in 2008,

when the Lehman Brothers, one of the world's largest banks, went bankrupt (Lioudis, 2024). Although all member states of the EU were affected, Greece was affected more due to its internal economic problems. Despite the growth of its economy at the beginning of 2000, Greece had a huge public debt that continued to enlarge, and combined with the crisis Greece was left helpless, banks were vulnerable to provide loans, interest rates increased, and the real economy was affected too creating for Greece an uncertain future, (Korres, Ladias, Kokkinou).

(table 12), (GDP per capita, 2019)
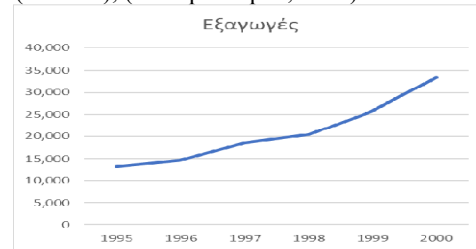
(table 13), (Statistical, 2024)
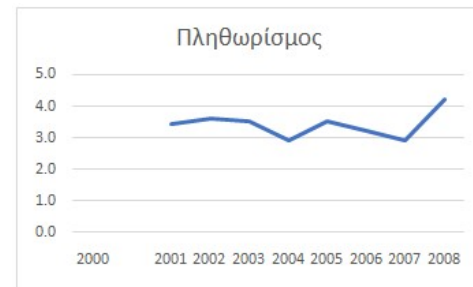
4.Conclusion and discussion

Based on the above, different opinions can be expressed on the case of Greece participating in the Eurozone. Although the conditions of Europe set to accept a country in the Eurozone were strict, it is almost certain that in the long-term there is financial security to each member

Finally, based on what was analyzed, it is clear that in order for Greece to join the eurozone, the nation was forced to turn into a much healthier and more sustainable economy, while Greece's economic crisis was not influenced by Europe's economic zone but by factors of bad political and economic decisions of the previous years.

Finaly, coming to my point of view, the advantages of joining the economic zone of Europe far outweigh the disadvantages, and in the long run, there is greater security on the path for each member of the union.

ID: 031

ALTERNATİVE GOVERNMENT RESPONSE STRATEGİES AND PREVENTİVE MEASURES İN ECONOMİC CRİSES İN TURKEY

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ABSTRACT

The aim of this study is to analyze the effects of the global crises that occurred in the 20th and 21st centuries on developing countries and to examine the economic crises that emerged especially in the case of Turkey. The research aims to determine the specific effects of global crises on countries such as Turkey and to identify effective alternative strategies that the government can implement to address these crises. The study will evaluate solutions such as strengthening financial regulation, ensuring the sustainability of hot money flows and more effective supervision of personnel transfers from the public sector to financial institutions. These approaches aim to provide practical and applicable roadmaps for Turkey and other developing countries facing similar economic challenges.

Keywords: Global Crises, Turkey Economy and Financial Regulations.

1. Introduction

Economic and financial crises appear as a result of the dynamics and structural problems of the global economy. Developing countries are disproportionately affected by such crises and feel their adverse effects more deeply. This study examines the global crises that turkey faced in the 20th and 21st centuries and the state interventions against these crises. Turkey, with its economic structure, political dynamics and financial markets, sets an essential example for other developing countries.

Topıc summary. In the 20th and 21st centuries, global crises have caused major fluctuations in economic, social and political terms and have had a profound impact on developing countries in particular. These crises have created severe shocks in the economic structures of countries and threatened long-term economic stability. The main objective of this study is to analyse the economic dimensions of these crises through Turkey.

2. Focal point

The study will examine how the Turkish economy has been affected by past global crises and evaluate the strategies that governments have implemented or could implement in this context. Turkey's economic structure, how it has been affected by global crises and which policies have been successful in managing these effects will be emphasized.

3. Purpose and scope

The aim of the research is to identify the specific effects of the global crises on Turkey and to suggest effective strategies that the government can implement to counter these crises. It will focus on issues such as strengthening financial regulation, ensuring the sustainability of hot money flows and controlling personnel transfers from the public sector to financial institutions. This study aims to provide practical and applicable roadmaps for developing countries like Turkey to become more resilient in crisis management.

4. Lıteratur revıew

4.1 Global Crises

Past global crises include the Great Depression of 1929, the Asian Financial Crisis of 1997, and the Global Financial Crisis of 2008. These crises led to large economic fluctuations, currency devaluations and high inflation rates in developing countries. The regulations and measures taken in the aftermath of each crisis have aimed to make developing countries better prepared for crises.

The Impacts of Crises on Turkey:
Turkey has been remarkably affected by the global crises of the 20th and 21st centuries. In this section, some of the major economic crises Turkey has experienced in the past and their global dimensions will be discussed:

The 1994 Crisis:
The 1994 economic crisis caused a major volatility in Turkey's financial markets. The tight monetary policies and financial regulations implemented with

the intervention of the government played a substantial role in mitigating the effects of the crisis. In this period, it was aimed to strengthen public finances and bring inflation under control (Akçay & Güngen, 2019).

The 2001 Crisis:
The year 2001 was an economic turning point for Turkey. The banking sector was restructured and financial regulations were significantly strengthened. During this period, the BRSA (Banking Regulation and Supervision Agency) was established and the activities of banks were placed under stricter supervision. Moreover, comprehensive reforms were undertaken to ensure fiscal discipline and sustainability of public debt. (Öniş & Kutlay, 2020).

The 2008 Global Financial Crisis:
The 2008 global financial crisis deeply affected Turkey as well. During this period, expansionary fiscal policies and stimulus packages implemented by the government aimed to revive the economy. At the same time, the Central Bank's interest rate cuts and liquidity provision measures helped to stabilize financial markets. This crisis led to an increase in Turkey's foreign trade deficit and fluctuations in exchange rates (Orhangazi & Yeldan, 2021).

5. Methodology

5.1 Data and Analysis Methods

In this study, various sources have been used to evaluate the economic crises Turkey experienced between 1990 and 2020 and the effects of these crises. The main sources are as follows:
Turkish Statistical Institute (TurkStat): Turkey's economic indicators, employment data, inflation rates and GDP growth rates are provided.
World Bank: Macroeconomic data on Turkey and other countries, investment data and comparative data on developing countries were obtained.
International Monetary Fund (IMF): Data on Turkey's fiscal position, debt statistics, and economic performance in times of crisis.
OECD: Turkey's economic indicators and international comparative data are provided.
The data were analysed by econometric analysis, regression analysis and comparative methods. The main methods used in the analyses are as follows:
Time Series Analysis: Time series analysis is used to analyse the changes in economic indicators over time. With this method, changes and trends in macroeconomic indicators during crisis periods were analysed.
Regression Analysis: Regression analysis was conducted to determine the relationship between

economic crises and various factors. With this analysis, the relationships between the causes and consequences of crises are evaluated.
Comparative Analysis: Turkey's performance in crisis periods is compared with other countries with similar economic structures. With this method, Turkey's crisis management strategies and differences with other countries are evaluated.

5.2 Scopes and restrictions

The scope of the research includes economic data for the period 1990-2020. However, there are some restrictions and limitations:
Data Limitations: The fact that some economic indicators are not updated and data deficiencies may affect the results of the research. Accuracy and reliability of data are crucial, especially in times of crisis.
Scope Limitations: The research covers only Turkey and specific crisis periods. Data and comparisons with other countries are limited.
Methods of Analysis: The analysis methods and econometric models used are based on certain assumptions. The validity and accuracy of these assumptions may affect the research results.
External Factors: Global economic developments, political events and other external factors may affect Turkey's performance during crisis periods. These factors may not have been fully taken into account in the analysis.

5.3 Findings

Turkey faced various global crises in the 20th and 21st centuries and developed various state interventions and strategies against these crises. The findings show that financial regulations and financial policies implemented during crisis periods play an important role in mitigating the effects of crises.
The 1994 Crisis:
During the 1994 economic crisis, the government's tight monetary policies and financial regulations were effective in mitigating the effects of the crisis. Strengthening public finances and controlling inflation contributed to economic stabilization (Akçay & Güngen, 2019).
The 2001 Crisis:
The 2001 crisis led to fundamental changes in Turkey's banking sector. The establishment of the BRSA and stricter supervision of banks' activities played a significant role in ensuring financial stability. Reforms to ensure fiscal discipline and sustainability of public debt accelerated economic recovery (Öniş & Kutlay, 2020).
**The 2008 Global Financial Crisis:**

The 2008 global financial crisis led to the implementation of expansionary fiscal policies and stimulus packages in Turkey. The Central Bank's interest rate cuts and liquidity provision measures helped stabilize financial markets. However, there were also problems such as an increase in the foreign trade deficit and fluctuations in exchange rates (Orhangazi & Yeldan, 2021).

6. Argument

Turkey's strategies to cope with economic crises have focused on strengthening financial regulations and restructuring the banking sector. The reforms implemented after the 2001 crisis increased Turkey's financial stability and made it more resilient to similar crises. However, the difficulties and shortcomings encountered in this process should not be ignored. For instance, although issues such as the sustainability of hot money flows and the supervision of personnel transfers from the public sector to financial institutions are important in mitigating the effects of crises, various problems have been encountered in practice (Kılınç et al., 2012).

Increasing Capital Adequacy Ratios of Banks
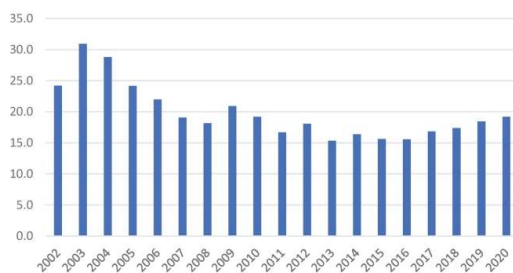
(https://link.springer.com/chapter/10.1007/978-3-030-93725-6_9)

Increasing banks' capital adequacy ratios plays a critical role in mitigating the effects of economic crises. High capital adequacy ratios increase the financial resilience of banks, providing protection against credit losses and other financial losses. This reduces the risk of bank failures and improves the overall reliability of the financial system. Moreover, banks with high capital adequacy ratios contribute to mitigating systemic risk and help prevent contagion effects that may affect other banks in times of crisis. Capital adequacy ratios set in accordance with regulatory standards enhance banks' long-term resilience and support their post-crisis recovery processes. In this framework, strengthening banks' capital adequacy ratios will

make them more resilient in times of crisis.

7. Adoption of Transparency and Accountability Principles

Financial institutions and markets should operate in accordance with the principles of transparency and accountability. This will enlarge investor confidence and ensure financial stability.

Regulation of Financial Products and Services
New financial products and services need to be regulated and supervised. This will make financial markets healthier and more reliable.

Hot Money Flows
Policies implemented to ensure the sustainability of hot money flows, the stability of exchange rates and strategies to gain the confidence of foreign investors are important. Some of Turkey's policies and recommendations for managing hot money flows are as follows:

Increasing Foreign Exchange Reserves: Increasing foreign exchange reserves is significant to prevent exchange rate fluctuations in times of economic crisis. The Central Bank should take strategic steps to strengthen foreign exchange reserves.

Creating an Attractive Investment Environment for Foreign Investors: An attractive investment environment should be created to encourage foreign investors to invest in Turkey. Tax incentives, legal regulations and investment facilities should be provided.

Taking Safeguards Against Exchange Rate Fluctuations: Safeguard measures should be taken to prevent fluctuations in exchange rates. The Central Bank should intervene against speculative movements in foreign exchange markets.

Transitions from the Public Sector
The supervision of personnel transfers from the public sector to financial institutions should be handled within the framework of transparency and accountability principles. Suggested legal arrangements for more effective supervision of these transfers are as follows:

Public Personnel Should Wait for a Certain Period of Time Before Starting to Work in Financial Institutions: Public servants should be required to wait for a certain period of time before starting to work in financial institutions. This will prevent conflicts of interest.

Transparent and Traceable Transition Process: The transition process of public personnel to financial institutions should be transparent and traceable. Decisions taken and actions taken in this process should be shared with the public.

Taking Necessary Measures to Prevent Conflicts of Interest: Necessary legal and administrative

arrangements should be made to prevent conflicts of interest. In this context, certain ethical rules should be determined in case public personnel work in financial institutions.

Conclusion and suggestions

Overall Evaluation

The overall results of the study summarize how Turkey has been affected by global crises and which strategies have been successful in managing these impacts. Turkey has learned important lessons from past crises and has undertaken various reforms in crisis management. However, more efforts are needed to ensure financial stability and minimize the effects of crises.

Policy Recommendations

Practical and feasible policy recommendations for Turkey and similar countries will be presented, covering issues such as strengthening financial regulation, sustainability of liquidity flows and effective supervision of personnel transfers from the public sector to financial institutions.

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MICRO-MOMENTS OF THE E-CONSUMER

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ABSTRACT

In a world where mobile devices are almost an extension of ourselves, every tap, swipe, and scroll shapes our digital experiences and decisions. Imagine the countless times you quickly check your phone for a product review, a price comparison, or a last-minute purchase. These seemingly trivial actions, known as micro-moments, hold immense power in the realm of e-commerce. The paper titled "MICRO-MOMENTS OF THE E-CONSUMER" explores this pervasive phenomenon in the lives of mobile phone users. These fleeting interactions significantly impact e-consumers' decision-making processes. The study combines a literature review with an original mixed-method approach, focusing on Generations Y and Z. In the qualitative phase, participants navigated online shopping sites, and eye-tracking data informed heat maps. The subsequent quantitative phase explored differences in micro-moment experiences between the two generational cohorts. The research underscores the pivotal role of micro-moments in shaping e-consumer behaviour, highlighting their influential impact on purchasing decisions and consumer engagement in the digital realm, while providing insights into distinct generational perspectives within the digital landscape.
Generation Z favours vibrant colours, dynamic visual content, and interactive website elements, while Generation Y prefers structured navigation and detailed content, emphasizing efficiency in browsing. Tailoring digital marketing strategies to these generational preferences is crucial for enhancing user engagement and satisfaction.

Keywords: micro-moments, consumer behaviour, generational differences, online shopping, decision-making, customer journey, Generation Y, Generation Z.
Jel classification:M31, L81, D91.

1. Introduction

In contemporary society, people's excessive attachment to their smartphones, along with the omnipresence of technology in everyday life, constitutes a major opportunity for understanding and approaching online consumer behaviour (Gilani and Twiss, 2018). The purpose of this paper is to illustrate and explore a phenomenon nearly ubiquitous in the lives of mobile phone users, known as micro-moments. Micro-moments are defined as brief, spontaneous moments when a person immediately turns to a device, often a smartphone, togather information, complete a purchase or decide(term coined by Google in 2015, Web-1). Micro-moments have emerged as a relatively recent focus within marketing research.

This study is intergenerational in nature and encompasses both a literature review and original mixed-method research on the experience of micro-moments in the digital environment during the purchasing processes of Romanian representatives from Generations Y and Z. In the initial stage of the study, qualitative research was conducted through individual computer-assisted observation sessions, during which participants navigated the same online shopping websites. This approach provided a series of insights into the perspectives and preferences of the two generations, Y and Z, regarding moments throughout the online consumer experience. Utilizing data collected via eye-tracking software, several heat maps were generated for each participant, identifying areas of

interest on the websites. Subsequently, based on the results provided, we formulated hypotheses and developed a survey instrument for the quantitative research phase.

The primary objective was to achieve a comprehensive understanding of the differences in how micro-moments are experienced by representatives of Generations Y and Z during online purchasing processes.

2. Literature review

Essentially, any activity conducted on a website accessed via a mobile phone could potentially trigger the instant occurrence of a micro-moment, leading to the emergence or expression of a spontaneous intention or desire of the digital consumer (Huang and Chen, 2016, cited in Gilani and Twiss, 2018). For a smartphone user, the context in which micro-moments manifest can range from intentional search and action during the consumption process (ex: craving Italian food prompts a consumer to use their mobile phone to search for local restaurants, choose the best option, and place an order), to user-induced situations (ex: seeing a social media post from a close friend vacationing abroad sparks a desire to travel, immediately followed by online searches for possible destinations and flight tickets, culminating in their purchase). The main elements that facilitate an advertiser's efforts to reach the desired target audience are understanding objectives, context, and consumer needs related to both immediate response and relevance provided (Bhimrao and Rautrao, 2020).

Micro-moments are defined by three key elements: the context of occurrence, the consumer's intention, and their immediate reaction. These moments occur in diverse locations and modes throughout the day, prompting consumers to quickly turn to their mobile phones to satisfy sudden curiosities or desires. In response to these dynamics, companies are advised to enhance their marketing strategies by leveraging micro-moments, as illustrated in Figure 1. This involves being present to anticipate and intercept user micro-moments, providing relevant information aligned with consumer needs, and ensuring a seamless and rapid online experience (Adams et al.,2016).

Fig 1 Marketing strategies to capitalize on micro-moments, adapted from Adams et al., (2016)

Micro-moments are also characterized by a unique degree of flexibility and configurability (Haller et al, 2020), based on the fact that the e-consumer is in a position to decide at which stage of the consumption process they wish to interact with a particular brand, in what manner, and without being constrained to follow a linear sequence of steps, as is the case with classic marketing funnel models (Kleinkercher et al., 2018). The stages specific to classic models are practically fragmented into hundreds of small decision-making moments (Enache and Morozan, 2017).

Types of micro-moments of the digital consumer. Four essential types of micro-moments significantly influence the decision-making journey of the e-consumer (Adams et al.,2016), each with its distinct characteristics as shown in the table below.

Table 1. Types and characteristics of micro-moments

Type	Characteristics
I-want-to-know moments	Consumers explore or research information, often for educational purposes or to satisfy curiosity, but without being in purchase mode yet. They are looking for information-rich content that is easily accessible and reliable.
I-want-to-go moments	Consumers are looking for a specific location or business nearby. They often search for directions, store hours, or contact information. These moments are driven by immediacy and convenience, requiring accurate and up-to-date information.
I-want-to-do moments	Consumers require assistance in completing tasks or seek how-to advice. They value actionable, easy-to-follow content that can help them accomplish their goals quickly.
I-want-to-buy moments	Consumers are ready to make a purchase seek validation or a smooth transaction process. They look for reviews, product comparisons, and deals. Trustworthiness, ease of purchase, and positive user experiences are crucial in these moments.

Source: Data compiled by the author.

The Experience of Micro-Moments: The

Companies' Perspective

The inclusion of micro-moments and the creation of valuable content for the website are characteristic of companies that succeed in reaching the desired target audience before the decision-making process (Bhimrao and Rautrao, 2020). The three techniques for improving marketing strategies through leveraging micro-moments mentioned above have vast applicability for companies seeking to reach consumers through the ubiquitous mobile phone, often considered an extension of the person. Smartphones serve as portable tools that allow the consumer to perform various tasks related to the purchase process at any time. For this reason, the use of geo-marketing and the exploitation of "Big Data" are often approached with the aim of triggering and anticipating micro-moments (Gilani and Twiss, 2018).

A well-established online presence of a company is a defining factor, as smartphone user purchases are characterized by spontaneity, rarely planned, and often made in connection with a micro-moment (as shown in a study, 71% of the participants make online purchases during micro-moments, and 35% of them claim to do so at least once a week (Haller et al, 2020)).

3. Data and methodology

This chapter focuses on identifying the similarities and specific differences between Generation Y and Generation Z in terms of their experience with micro-moments in the digital environment during purchasing processes. The study employed a mixed approach, combining qualitative and quantitative research, to gain an in-depth understanding of the subject.

Qualitative Research. Firstly, the main purpose of this qualitative research is to obtain a comprehensive understanding of the manifestation of micro-moments experienced by representatives of the two generations, Y and Z, during online purchasing processes. Secondly, it serves as an instrumental goal for the second stage of the study, based on the results obtained to develop both hypotheses and the survey instrument (questionnaire) for the quantitative research. The research problem focused on identifying and characterizing specific micro-moments experienced by representatives of Generations Y and Z during online purchasing processes. Qualitative research was conducted using eye-tracking software (Web-2) during individual sessions.This program records eye movements through the webcam while participants navigate

shopping websites, subsequently capturing screenshots used to generate heat maps highlighting areas of interest. Analysis of the 177 generated heat maps revealed patterns that formed the basis of the research conclusions. The areas that were not ignored by the gaze of the participants are coloured to indicate their level of attention and engagement on the next heat map, as illustrated in Figure 2.
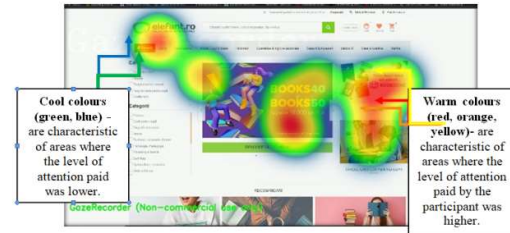
Fig 2: Example of a heat map and legend of assigned colours.

Source: Data compiled by the author.

The proposed objectives of the qualitative research are listed in the following table.

Table 2 Centralization of qualitative research objectives

	Objective
O.a.1.	Identification of the general preferences of both generations (Y and Z) regarding colour themes used on websites.
O.a.2.	Identification of the perception of banners by subjects from Generations Y and Z.
O.a.3.	Identification of the preferences of both generations (Y and Z) regarding a specific website navigation mode.
O.a.4.	Identification of the preferences of both generations (Y and Z) regarding the content displayed on websites (video type, image, review, etc.).

Source: Data compiled by the author.

In the study, participant selection involved identifying and recruiting individuals, both male and female, Romanian, who belong to Generation Y (1981-1996) or Generation Z (1997-2012), although generational cohorts can vary in their date ranges depending on the country (Sarraf, 2019). The total sample size consisted of 12 participants, with 6 from Generation Y and 6 from Generation Z, evenly split between genders with 3 males and 3 females in each cohort.The data interpretation was conducted in correlation with the objectives set at the beginning of the chapter, assigning a score based on the number of appearances of each

element in individual sessions with a participant included in the areas of interest on the heat maps. The categories of elements are presented in the following tables.

Table 3. Centralization of appearance frequencies for Generation Y

Element Categories	Y1	Y2	Y3	Y4	Y5	Y6	Total Appearance Frequency
Bold, Intense Colours	2	4	4	3	3	3	19
Light Colours and Neutral Shades	5	5	3	5	7	2	27
Website Banners	2	2	2	2	2	2	12
Pop-ups, Interactive Content	1	0	1	0	0	0	2
Menu and Filters	11	3	7	12	6	6	45
Navigation Bar	0	4	2	2	2	0	10
Image or Video Content	4	5	8	6	7	4	34
Review or Description Content	3	3	7	2	2	3	20

Source: Data compiled by the author.

Table 4 Centralization of appearance frequencies for Generation Z

Element Categories	Y1	Y2	Y3	Y4	Y5	Y6	Total Appearance Frequency
Bold, Intense Colours	11	11	10	6	4	7	49
Light Colours and Neutral Shades	2	5	5	5	2	6	25
Website Banners	11	11	9	8	6	7	52
Pop-ups, Interactive Content	0	0	0	3	0	0	3
Menu and Filters	0	3	5	2	0	5	15
Navigation Bar	1	2	0	1	1	5	10
Image or Video Content	11	12	11	10	11	12	67
Review or Description Content	1	0	1	0	0	0	2

Source: Data compiled by the author.

Quantitative Research

The research problem focuses on measuring the differences exhibited in specific micro-moments between representatives of Generations Y and Z, residing in the city of Iasi, during online purchasing processes. The method employed was a survey, using a questionnaire as the instrument, and data collection was conducted via CAWI (Computer-Assisted Web Interviewing). The total sample size was 300 individuals, with 150 representatives from Generation Y (75 female, 75 male) and 150 from Generation Z (75 female, 75 male).

Table 5 Centralization of quantitative research objectives

Code	Objective
O.b.1.	Determining the differences between the perceptions of Generations Y and Z regarding types of colours used on shopping websites.
O.b.2	Determining the differences in interaction behaviour between representatives of Generations Y and Z with banners on shopping websites.
O.b.3.	Determining the attitude towards the use of menus and filtering options on websites during online purchasing processes, among Generations Y and Z.
O.b.4.	Determining the preferences of representatives of Generations Y and Z regarding website content (video type, image, review, etc.).

Source: Data compiled by the author.

The analysis and interpretation of the data were conducted using SPSS Statistics software and the Independent Samples T-test statistical test, through which the two groups of interest, Generation Y and Generation Z, were compared to determine if there was a statistically significant difference in mean scores between the two studied groups. Items from the questionnaire were grouped and analysed according to the corresponding objective. The answering scale consisted of five options to indicate the level of agreement with the statements from the questionnaire, ranging from "strongly disagree" to "strongly agree."

Results

Qualitative Findings

The study reveals distinct preferences and behaviours between Generation Y and Generation Z in their online shopping experiences, particularly in their micro-moments. Generation Z, characterized by a higher engagement with bright, intense colours and dynamic visual content such as images and videos, shows a greater inclination toward visually stimulating and interactive elements. This generation also pays more attention to site banners, indicating a higher receptivity to marketing visuals and promotional content.

In contrast, Generation Y prefers a more structured and information-driven approach, favouring menus, filters, and content that provides detailed reviews or descriptions. This generation's moderate engagement with light colours and neutral shades, combined with a lower attraction to interactive pop-ups and site banners, suggests a preference for a straightforward and efficient navigation experience.

Quantitative Findings

Generation Y

While browsing,Generation Y favourscolour schemes predominantly in neutral tones (T = 5.139, Sig.=0.004) and prefers websites with a light colour theme (T = 6.935, Sig.<0.001).They find intense colours distracting and overwhelming (T = 7.207, Sig.<0.001), while pastel colours contribute to a pleasant and calm browsing atmosphere (T = 4.301, Sig.<0.001).Site colour schemes play a significant role for them, influencing their site engagement and mood (T = 8.172, Sig.<0.001).They are more likely to leave a website due to the influence of banners (T = 7.619, Sig.<0.001).and are adept at using structured menus to navigate directly to desired sections (T = 12.580, Sig.<0.001).Quick access to and efficient use of product filters is crucial for their shopping experience (T = 10.030, Sig.<0.001), aiding in rapid product discovery.High-quality, multi-perspective product images are appreciated as they help form accurate perceptions of product appearance and quality theme (T = 10.256, Sig.< 0.001).Conversely, unclear or insufficient product images prompt them to abandon websites (T = 11.196, Sig.<0.001).

Generation Z

Unlike Generation Y, Generation Z prefers websites with a dark colour theme (T = -10.806, Sig.< 0.001). Also, they gravitate toward websites featuring bold and vivid colours (T =-3.059, Sig.<0.001), finding them attention-grabbing and helpful for maintaining focus (T = -4.470, Sig.< 0.001), while considering pastel colours on sites as boring (T = -7.878, Sig.< 0.001). The main banner on a website significantly influences them to explore and interact more with the content (T = -10.622, Sig.= 0.012)and acknowledge their utility in navigation (T = -3.963, Sig.<0.001). Also, Generation Z does not consider menu navigation integral to their shopping behaviour (T = -5.383, Sig.=0.002)and does not use filtering options when exploring shopping sites (T = -8.222, Sig.<0.001). They are drawn to sites offering interactive content such as moving ads and 360-degree product images (T = -16.672, Sig.=0.027), and appreciate educational content like buying guides, tutorials, and informative articles theme (T = -7.482, Sig.<0.001).They find pop-up reviews on shopping sites useful when prominently displayed (T = -5.925, Sig.=0.007) and are more comfortable exploring sites where advertisements are well-integrated into the content (T = -3.447, Sig.=0.024).

Conclusion

This research highlights significant generational differences in online shopping preferences between Generation Y and Generation Z.

Generation Y values clear, structured and detailed-rich environments. They prefer neutral colour schemes, efficient navigation through structured menus and filters, and comprehensive product information. This generation is less tolerant of distracting elements and favours straightforward browsing experiences.

Generation Z exhibits a stronger preference for visually dynamic and interactive online experiences, this generation being highly responsive to interactive content. They find well-integrated advertisements and pop-up reviews useful, which suggests a higher tolerance for promotional content when it enhances their shopping experience.

Overall, the study reveals that to effectively engage e-consumers, digital marketing strategies must be finely tuned to the unique micro-moment preferences of each generation. By doing so, businesses can enhance user satisfaction, increase engagement, and ultimately drive higher conversion rates. Understanding and leveraging these generational differences is essential for creating compelling and relevant online experiences that resonate with both Generation Y and Generation Z.

Research limitations

General limitations

- Assessing whether participants provided honest, accurate responses is challenging. Factors such as social desirability bias or a desire to appear a certain way could influence the truthfulness of their answers.
- The data collected may be too broad and conceptual to apply directly to specific real-world scenarios, individuals, and circumstances. The findings may not fully capture the nuances and complexities of actual situations. Also, it is unclear how engaged and thoughtful respondents were when completing the questionnaire. Factors like forgetfulness, lack of motivation, or failure to consider the full context of the questions could impact the quality of their responses.
- Reluctance of individuals to participate in a study.

Particular limitations

- Due to limitations of the GazeRecorder demo version, each site was allotted a maximum of 60 seconds, with each participant spending a total of 180 seconds in the session.
- Calibration of measurements and the camera can vary from one analysis session to another due to technical reasons (such as computer processing capacity, internet connection, web page loading speed, etc.) and environmental factors (such as the type of lighting in the room).
- Altered behaviour of subjects due to the stress of being observed.
- Possible technical errors related to the devices used to access the questionnaire or internet connectivity.
- Abandonment of the questionnaire before completion due to objective reasons.

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EDINBURGH AS A UNESCO WORLD HERITAGE SITE: A JOURNEY THROUGH STAKEHOLDERS' PERCEIVED ECONOMIC AND SOCIO-CULTURAL IMPACTS

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ABSTRACT

This thesis examines the perceived economic and socio-cultural impacts of Edinburgh's Old and New Town being designated as a UNESCO World Heritage Site, exploring how these impacts differ among key stakeholders, including governance actors, tourism businesses, and residents. The research combines a literature review with qualitative interviews to investigate the complexities surrounding the World Heritage designation within a historic urban setting.

Edinburgh is an interesting scene to research heritage, as the World Heritage Site designated is 4,5 km2 with over 4000 listed buildings. The city is alive and vibrant, but heritage challenges modernity and progression because it comes with many restrictions.

While previous studies have explored the general effects of World Heritage Site designation, there's limited research on how these impacts vary among different stakeholders in a specific urban context, especially a lack of studies on Edinburgh. This research contributes to filling that gap by examining stakeholder perceptions and offering practical insights into the management of heritage sites within a bustling urban environment.

The outcome of the research revealed that while World Heritage designation is generally viewed as a positive development by tourism stakeholders, it presents some challenges for residents. Governance actors and tourism businesses recognize the economic benefits of tourism opportunities and civic pride associated with the WHS status, but their strategy on tourism growth often conflicts with the priorities of residents who value heritage preservation and community stability. Additionally, there is a notable lack of awareness among stakeholders about the WHS designation, and differing opinions on the most appropriate ways to manage the impacts of overtourism, conservation regulations, and authenticity.

The thesis contributes to the broader discourse on heritage tourism by highlighting the need for a balanced approach to managing the economic and socio-cultural dynamics of World Heritage Sites. By fostering greater cooperation among stakeholders, it is possible to ensure that the benefits of World Heritage designation are sustained while mitigating negative impacts on the local community and heritage integrity.

Keywords: Edinburgh, World Heritage Site Designation, Economic impacts, Sociocultural impacts, stakeholders

1. Introduction

Over the past decades, tourism has grown significantly in the UK, with a 35% increase in overseas visits from 2010-2019 (Statista, 2023). This growth underscores the need for sustainable management of cultural heritage sites. Heritage preservation in the UK is crucial for economic prosperity, contributing £36.6 billion in Gross Value Added (GVA) and supporting over 563,509 jobs in 2019 (Historic England, 2020). Heritage-related tourism also generated £18.4 billion in spending from 215 million trips, highlighting its economic impact (Horsfield, 2020).

In Scotland, tourism accounts for around 5% of GDP and 8% of employment (Business Insider, 2023). Post-pandemic recovery has been robust, with a 14% increase in foreign visitors in 2023 (The Scottish Government, 2024). Scotland's historic environment contributed £4.4 billion to the economy in 2019, supporting approximately 68,000 jobs (Historic Environment Scotland, 2022). Edinburgh, a UNESCO WHS since 1995, plays a significant role in this, attracting over four million visitors annually (Meeting Edinburgh, n.d.). The city's WHS designation helps preserve its dual historical character and boosts tourism.

Overall, the research emphasizes the vital role of heritage tourism in economic development and the importance of maintaining and promoting these sites sustainably.

Conclusion

RQ1: How do stakeholders active within the old and new town in Edinburgh perceive the economic impacts of being a WHS?

Governance Actors: Governance actors view transforming neglected buildings into visitor attractions as economically beneficial for residents and tourists. They highlight a need for traditional skills to maintain the WHS, noting a skill gap and increased costs. The WHS designation is valuable for marketing, but its full potential is underutilized, requiring greater awareness and engagement to enhance city branding and heritage preservation. Balancing economic development with conservation remains a challenge.

Tourism Businesses: Tourism businesses see the WHS designation as enhancing the city's appeal, attracting tourists interested in cultural and historical experiences, and boosting economic activity. However, there's a lack of enthusiasm within the industry to fully utilize the WHS status for promotion, indicating missed opportunities. Greater promotion and education about the WHS's Outstanding Universal Value (OUV) are needed to realize its economic potential.

Residents: Residents recognize both benefits and challenges of the WHS designation. They appreciate conservation regulations but are frustrated by higher costs and bureaucratic hurdles for renovations. Tourism-driven changes in the retail landscape are viewed negatively, with concerns about overtourism and insufficient reinvestment of tourism revenues, leading to growing negativity toward tourism.

RQ2: How do stakeholders active within the old and new town in Edinburgh perceive the socio-cultural impacts of being a WHS?

Governance Actors: Governance actors have mixed perceptions of the socio-cultural impacts. Low awareness of the WHS among residents and tourists hampers effective promotion. Concerns about litter, lack of respect for heritage, and managing visitor numbers are significant. Governance actors see WHS as part of Edinburgh's cultural identity, contributing to civic pride, but question if these impacts stem directly from the designation or the area's historical significance.

Tourism Businesses: Tourism businesses acknowledge both positive and negative socio-cultural impacts. They appreciate the WHS's contribution to the city's character and civic pride but face limited awareness, hindering effective promotion. This suggests a need for greater integration of WHS into the city's marketing strategies. (3)

Residents: Residents exhibit civic pride but are concerned about the erosion of authenticity due to overtourism and commercialization. The shift in retail focus and staged authenticity create a sense of loss of community. A lack of awareness among residents not involved in heritage or tourism contributes to issues like litter and disrespect for the site.

RQ3: On which perceived impacts do stakeholders' perceptions align, and on which do they diverge?

Despite recognizing the value of WHS status for local identity and civic pride, stakeholders diverge in their perceptions and management of its impacts. Governance actors and tourism businesses focus on economic benefits, while residents emphasize socio-cultural aspects like community preservation and authenticity. Underutilization of WHS status in marketing and perceived under-management contribute to residents' frustrations, highlighting the need for better engagement and communication among stakeholders.

Main RQ: To what extent are the perceived economic and socio-cultural impacts of being a UNESCO WHS aligned between tourism stakeholders in the Old and New Town of Edinburgh?

The research reveals that WHS impacts are complex and not easily measurable. Alignment and divergence among stakeholders are apparent. Governance actors and tourism businesses highlight marketing impacts and economic benefits, while residents focus on socio-cultural concerns and preservation policies. The uncertainty about whether WHS designation alone fosters civic pride suggests the need for more community engagement and education about the site's OUV. Overall, balancing economic growth with heritage conservation requires improved strategies and stakeholder collaboration.

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Students Presentation- Session 7

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THE BALANCE BETWEEN ECONOMIC DEVELOPMENT AND SUSTAINABLE DEVELOPMENT IN THE TOURISM INDUSTRY

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Abstract

Tourism is increasing and has reached pre-pandemic levels. This has presented multiple investment opportunities but simultaneously created an urgent need for sustainable development of the sector. Tourism-related air travel and maritime transport contribute to greenhouse gas emissions, and the construction and operation of tourism infrastructure, such as hotels, resorts, and airports, can lead to environmental degradation and increased energy consumption. In turn, the destruction of the natural environment and the consequences of climate change can negatively affect tourism. Sustainable practices must be adopted by both tourists and the tourism industry by reducing carbon dioxide emissions (by using biofuels), promoting environmentally friendly accommodation (by managing waste, reducing water and energy consumption), and supporting local communities. Sustainable development may be more costly for investors, but in the future it will create a more stable industry, which can continue to grow and increase profitability. In addition, the legislative framework is constantly being adapted to promote sustainable practices and penalize unsustainable ones, so the tourism industry must adopt sustainable practices before they become mandatory, and at the same time more expensive.

Key words: Sustainable development in Tourism, SAF, Sustainability in hospitality, Sustainability in aviation.

Introduction

Sustainable development requires an integrated approach that considers environmental concerns along with economic development. In 1987, the Brundtland Commission of the United Nations defined sustainability as "meeting the needs of the present without compromising the ability of future generations to meet their own needs." The concept of sustainability has become established and is now a core part of business. in all sectors, including tourism. It is impossible to consider sustainable development without referring to tourism as a whole. With its wide range of applications, tourism is a multidimensional industry with a notable emphasis on environmental, socio-cultural, and economic aspects. Tourism has a very large flow of products and services, therefore sustainability in tourism is of great concern to businesses, tourists, and the scientific community. (Lickorish&Jenkins, 2011).

According to (Sakshi, etal., 2019) in the tourism and hospitality sectors, sustainability has attracted particular attention due to the industry's high consumption of energy, water, and disposable products, as well as the potential for the release of hazardous emissions into air, soil, and water from routine processes. Since the visitor is actively engaged in the tourism industry by exploiting local resources and engaging with the location and destination, tourism businesses must respond to visitor demand and educate and sensitize visitors to the inherent responsibilities of travel (Oliveira, et al., 2024).

In this paper, sustainability in tourism is divided into two main themes. First, the sustainable

practices in air transport, and the institutional framework of the European Union, according to the plan of "Fitfor 55", are presented. Then, the sustainability of the hospitality units is studied in three axes, the Environment, the Economy, and the Society.

Sustainable practices in EU aviation

Transportation is a key part of tourism since tourism by definition is carried out by transporting the tourist to a place other than the one where he resides permanently. Emissions from transport are of great concern to the international community, as they are responsible for a quarter of EU greenhouse gas emissions, according to data relating to the year 2018 (European Council, 2023). The effects of aviation on the environment, society, and the economy have been examined in many studies. As a result, governments and the European Union have taken measures to address these impacts, such as the action plan regulation below.

"Fit for 55, ReFuelEUAviation"

Clean and sustainable mobility is part of the EU's "Fitfor 55" plan, where as part of the Paris Agreement, EU countries committed to making the EU climate-neutral by 2050. This goal includes several steps, one of which is to reduce economy-wide net greenhouse gas emissions by at least 55% by 2030 compared to 1990 levels, in order to reach the final target in 2050. According to data published by the EU, of all transport emissions, 14.4% comes from air transport. The ReFuelEUAviation regulation forces changes in the transport industry to adopt sustainable practices. The regulation revolves around 3 actors, Europe's airports, airlines departing from Europe, and jet fuel companies (CounciloftheEuropeanUnion, 2023).

SAF usage, according to IATA

In terms of jet fuel suppliers, in 2022, only 0.1% of total fuel consumption concerns SAF (Sustainable Aviation Fuels), which is far from the target that has been set, so in 2050 SAF and synthetic fuels will constitute 70% of aviation fuel (IATA, 2023). SAF production has increased to 0.24Mt from 0.05Mt in 2020 due to continued increased demand, however, production volumes are currently insufficient to meet demand for jet fuel. The graph below from IATA (International Air Transport Association) describes the huge size difference, in quantity but also in price of

conventional and SAF. It is important to mention that although the price of SAF is more than twice that of conventional jet fuel, the entire amount of SAF produced was sold to airlines in 2022. To achieve a significant scale-up of SAF production, cooperation between governments and key stakeholders is required. industry. Such efforts will pave the way for coordinated strategic policies globally, incentivizing and facilitating the investments needed to expand SAF capacity and production in time for the aviation industry to meet its zero-emissions commitment by 2050.

The regulatory framework sets out the gradual increase in production of these fuels, where fuel suppliers must incorporate SAF at 2% in 2025, 6% in 2030, and 70% in 2050. From 2030, 1.2% of fuels must also be synthetic fuels, reaching 35% in 2050 (IATA, 2023).
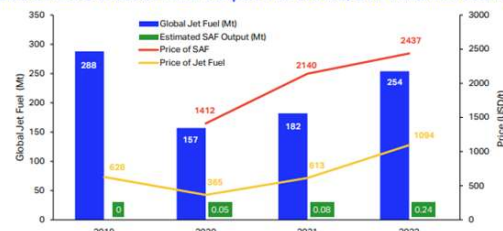
The next category concerns the regulations of airlines departing from airports located in Europe. The regulations concern the aircraft refueling process. Airlines are required to ensure that the annual amount of aviation fuel intended for refueling at a given EU airport is at least 90% of the annual aviation fuel requirement in order to avoid excess fueling practices that would cause additional emissions due to increased weight. This practice by aircraft operators is common in the industry to avoid refueling aircraft at airports where fuel prices are higher, thus significantly reducing operating costs (CounciloftheEuropeanUnion, 2023).

Europe's airports will, under the new regulatory framework, be obliged to provide the appropriate infrastructure to store and supply all types of sustainable jet fuel. It also contains rules on the competent authorities, designated by the Member States for the enforcement of this Regulation, and rules on the fines to be imposed on offenders. At the same time, it creates a data collection and reporting obligation for fuel suppliers and aircraft operators, which allows the monitoring of the

impact of this regulation on the competitiveness of EU operators and platforms. Finally, it encourages the creation of an EU labeling system of environmental performance for airlines using SAF, which will help consumers make informed choices and promote greener flying (CounciloftheEuropeanUnion, 2023).

Sustainable practices in accommodation units

The hotel industry has a significant impact on the environment, economy and local communities. Growing awareness and concern about climate change, coupled with rising consumer expectations for sustainable practices, have pushed hotels and other businesses in the industry to integrate sustainability into their operations. Hospitality units are a large part of the tourism industry, which is why the adoption of sustainable practices is essential for the sustainability of the industry.

The Environmental Impact of Hotels

International studies highlight the need for impact measurement systems, as well as the results and progress of the sustainable practices being followed. The environmental impact of hotels is multi-faceted, contributing to many areas such as energy consumption, water use, waste generation, greenhouse gas emissions, and ecosystem disruption. The environmental impact of accommodation units is divided into the following categories (Najar, 2020).

Energy Consumption
The hotel sector is among the sectors with the highest consumption of energy, as it is necessary in every activity. Reducing consumption not only reduces electricity bills but also reduces the hotel's environmental footprint (Μπαρή , 2023). Some good practices from abroad are replacing old light bulbs with new low-consumption LEDs. Also, the installation of solar panels replaces part of the energy consumption that has been produced in conventional and environmentally negative ways, with energy produced from renewable sources. Finally, the installation of motion sensors can significantly reduce energy consumption in areas that are not constantly used, such as corridors, meeting rooms or toilets. In this way, the company ensures that the lights turn on when necessary, and at the same time extends the life of the lamps.(Klein-Stojanov, 2020).

Water
Hotels' comprehensive efforts to reduce water have shown significant benefits. Water can be

depressurized and recycled as a means of reducing water waste. One of the most popular ways hotels have reduced water consumption is by replacing current appliances with water-efficient ones, including laundry facilities, toilets, showers, and faucets. Gray water recycling systems (called the water from the bathroom sink and shower tub) that reuse wash water have also been shown to reduce some hotels' total water consumption by around 23%. The payback period of these systems is approximately 14 years, but this number may vary by country. Guests who answered an in-room questionnaire about low-flow toilets were very satisfied. Water-saving notices in bathrooms that encourage customers to regulate their water use have also been found to be effective. Another measure commonly adopted by hotels is local irrigation systems in the gardens(Bruns-Smith, etal., 2015).

Waste reduction
The hotel industry has a long history of waste reduction, mainly recycling and composting. Recycling is a popular practice, perhaps because many recycling methods have a short payback period and can yield significant savings. In addition to recycling, a study of Vietnamese hotels (as just one example) found that composting organic waste to produce fertilizer it could be effective if a good system was used and workers trained in its use. Also, by donating old furniture to charities or selling used equipment, hotels can reduce their solid waste. Some hotels have switched to reusable bottles for toiletries, while others are reusing the tiny containers, and donating them to shelters and charities. A study found that most hoteliers are more willing to adopt small-scale waste reuse practices than larger practices that would require changes at the operational level (Radwan, etal., 2010).

Food management
More and more people are aware that the use and production of sustainable food and drink also makes a significant contribution to global sustainability, with the hotel industry being a major driver due to the numerous meals it serves in a year. In this way,(Walker , 2012), defines sustainable food and drink as the use of local products, as this way companies are able to reduce transport costs and contribute to the local economy. Also, the entire production process is important to guarantee energy efficiency and low CO2 emissions. However, (Legrand, etal., 2013) complement its definition with the fact that sustainable food production must necessarily respect natural resources, that is, it cannot consume these resources without worsening the state of the natural environment, so as not to jeopardize the

regeneration time of resources. It also classifies sustainable food and beverages as those that: are healthy and nutritious for consumers, and at the same time, provide a healthy and safe environment for their producers and retailers, respect the limits of environmental resources, safety and health of animals, and supporting the local economy and culture, through the use of products and raw materials from the community where they operate.

The Economic Impact of Hotels

Customers are not the only market that hotels consider in their sustainability programs. Investors also value sustainability, due to the favorable impact on a hotel's long-term value. Since increased revenue is the main driver of hotel value, hotels must overcome consumers' reluctance to pay extra for green practices. Hilton'sScandic has addressed this issue by setting a branding strategy of a 95% biodegradable room and charging a 10% higher room rate. Guest demand for this room is higher than for standard rooms. In addition, Scandic has expanded its environmental efforts at each of its properties, especially in terms of efficient water, energy, and waste management.15 Another hopeful sign is that 45% of guests who responded to a survey at the Statler Hotel in Ithaca, New York, said they would be willing to pay a higher room rate for hotel sustainability initiatives. Several exhibitions CHR (Commission on Human Rights) have demonstrated the importance of sustainability certification in gaining favorable visitor notice, including ISO 14001 and LEED (Leadership in Energy and EnvironmentalDesign). A study of over 2,000 independent hotels in Spain found that hotels that had implemented ISO 14001 environmental standards had stronger sales and EBITDA than those that were not certified. (Segarra-Oña, etal., 2011). The new v4 scoreboard of the LEED certification system is designed specifically for the hospitality industry and aims to create incentives for the construction of new accommodation that meets the sustainability criteria. A study of 93 LEED-certified hotels found that certified hotels performed better financially than a larger sample of non-certified ones. While the 93 certified hotels had a slightly lower occupancy rate, they had a higher average daily rate (ADR), which translated into higher revenue.

The Social Impact of Hotels

The social impact of hotels is particularly important today. Sustainable hotels often prioritize employee well-being, which can have multiple impacts on the local community. A commitment to fair wages,

healthy work environments, and training opportunities contributes to lower turnover rates, higher job satisfaction, and community well-being (Houdre, 2008). This holistic approach to worker welfare is particularly important in less affluent countries, where hotels are sometimes one of the few industries that offer steady employment(Αναμουρλής & Παπαβασιλείου, 2021). Society's shift towards sustainability, and the pressure it puts on hospitality units, can create ecological stress for workers. Their proper education, and the adoption of sustainable practices by them, in their daily lives, are one of the solutions, which will help promote feelings of empowerment and hope, as well as the treatment of potentially maladaptive dimensions of ecological stress(Joshua, et al., 2022).

Hotels have the ability to educate customers about responsible travel, responsible consumption, but also local customs and traditions, in order to respect local traditions, thus preserving the cultural heritage of the place, and promoting responsible behaviors to guests. Also, promoting special and alternative forms of tourism, such as disabled tourism, strengthens the sustainable development of the whole society, since infrastructures are created in the city to accommodate these tourists. Accommodation units, by designing facilities to be accessible to people with disabilities, offer services to marginalized groups. In this way, their integration into society is facilitated, and it offers the sense of normality they desire(Παπαλεξανδη , et al., 2019).

Benefits of Sustainable Practices in Hotels

Unfortunately, today, there are still many entrepreneurs who only consider the initial investment of a business, without checking other options that can become much more profitable in the long run, which is the case with sustainability. A large part of the aforementioned sustainable policies have a high acquisition value or require greater sensitivity on the part of managers, but in the long run, they can generate more benefits and even be a competitive advantage. Thus, according to (Malheiro, et al., 2020) the adoption of sustainable measures creates mainly two advantages: cost reduction and differentiation to the competition. Cost reduction is achieved through lower water consumption, and more efficient energy and waste management, among others, i.e. by reducing waste and consumption. Differentiation occurs because once the company offers a product or service that is considered "environmentally friendly" or contributes to

improving the quality of life in society, it will stand out from the rest. In addition, this differentiation will contribute to a better reputation and, consequently, to a greater attachment and loyalty of tourists, who are increasingly aware of the role of companies as social agents (Malheiro, et al., 2020). The fact that a new segment of the market has emerged, dealing with environmental and social issues, fosters new opportunities for the development of products and services and, for this, companies must take full advantage of technological developments, which increasingly offer sustainable solutions. On the other hand, companies must also respect government regulations regarding environmental obligations, not only to avoid the costs of sanctions afterwards, but also to demonstrate their contribution to modern and sustainable society. In short, it can be said that the competitive advantages resulting from the practice of a sustainable activity result from the implementation of a set of measures, which require constant updating and adaptation to new emerging needs.

Conclusion

Governments are constantly acting against climate change and are pushing companies to do the same, so it is in the tourism industry's best interest to act before it becomes mandatory. Tourism businesses can act as pioneers in implementing environmentally friendly practices. By adopting environmental management systems, regularly auditing their performance, monitoring sustainability practices, and continuously adapting to new technologies and evolving sustainability standards, they can chart a road map to achieving sustainability. Overall, the benefits of the sustainable development of hospitality businesses are many and include multiple dimensions such as financial profits, customer satisfaction, upgrading the reputation of the hotel and the destination, improving relations with society, maintaining workers, and promoting innovation, resilience, and long-term growth.

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TREE-BASED ALGORITHMS APPROACH ON PREDICTING EMPLOYEE TURNOVER

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ABSTRACT

Employee turnover is a challenge that organizations face because of the negative impact on employee productivity, morale and general performance. Understanding the factors that affect employee turnover is a part in developing efficient employee retention strategies. The objective of this paper is identifying the best classification model for predicting employee turnover and identifying the key factors that affect employee churn. To achieve the research objective, we conducted a comparative analysis between decision trees and random forest algorithms. The results of the analysis show that workplace satisfaction, workload, review score, average number of working hours per month, and tenure are the main factors of employee turnover. Among the two algorithms employed, random forest exhibited superior performance across all evaluation metrics utilized. This study contributes to the existing work by providing empirical proof regarding factors that affect employee turnover and by comparing different machine learning algorithms. The findings underline the value of machine learning techniques in understanding the complexities of the workforce in general and provide empirical proofs for building human resources strategies.

Keywords: machine learning; predictive analysis; employee turnover; classification; random forest; decision trees

1. Introduction

Employee turnover is a significant challenge faced by organizations across various industries. When productive employees choose to leave, driven by factors such as work pressure, unsuitable environments, or unsatisfactory compensation, it can have profound implications on productivity, morale, and overall organizational success. The departure of valuable employees not only reduces an organization's productivity but also places additional strain on human resource department to recruit, train, and integrate new hires. This

transition period can lower the morale of remaining employees, who are often required to take on extra work, potentially leading to a cascading effect where more employees follow their departing colleagues in search of better opportunities.

Understanding the factors contributing to employee turnover and developing effective strategies to mitigate it have become important tasks for HR professionals and organizational leaders. Existing literature on employee turnover offers valuable insights into the various factors influencing employees' decisions to leave the company. However, despite extensive research, there is no consensus on the specific factors driving employee turnover.

This study aims to deepen the understanding of factors influencing employee turnover and to develop a robust classification model to assist organizations in making informed decisions and implementing effective strategies to manage and reduce turnover. To achieve this, we established the following objectives:

- Apply tree-based machine learning algorithms to classify employee turnover.
- Identify the factors influencing employees' decisions to leave the company.
- Determine which algorithm provides the most accurate and robust classification of employee turnover.

Predicting employee turnover before it occurs can help company management prevent or at least mitigate its impact. Recent advances in machine learning and data analysis have provided new opportunities to delve into the complexities of employee turnover. By leveraging the power of machine learning algorithms, organizations can analyse large datasets to uncover hidden patterns, identify factors, and predict employee turnover with greater accuracy.

To achieve the proposed goals and objectives, this study undertook several steps. It reviewed existing literature on employee turnover, examining various theoretical frameworks and empirical findings to establish a solid foundation for understanding the complexity and dynamics of employee turnover. An empirical analysis was conducted using tree-

based machine learning algorithms known for their performance in predicting employee turnover in previous research. Decision trees and random forest were employed to analyse a dataset from a U.S.-based company, which included information on current and former employees. An initial exploratory data analysis and preprocessing step ensured data quality and consistency. Subsequently, various performance metrics were used to evaluate the classification capabilities of the developed models.

This research aims to contribute to the existing literature by conducting a comprehensive analysis of employee turnover, considering a wide range of factors that may influence employees' decisions to leave an organization. By creating multiple models using different machine learning algorithms, the study seeks to capture a nuanced understanding of the factors affecting turnover decisions.

In conclusion, this study highlights the factors impacting employee turnover and their relative importance, as identified through decision trees and random forest. Addressing these factors can help organizations foster a positive work environment, enhance employee engagement, and improve retention rates, ultimately contributing to the organization's long-term success.

2. State of the Art

Employee turnover is a highly studied phenomenon due to its significant importance to organizations. Employees play an important role in the success of companies, and their replacement can be difficult and time-consuming (Kaur & Vijay, 2016). Turnover affects the stability and performance of organizations. The costs associated with employee turnover are estimated to range from the equivalent of an annual salary for each departing employee (Boroş & Curşeu, 2013) to millions of dollars in recruitment, training, and lost productivity (Perryer et al., 2010). The departure of employees also impacts the morale of those who remain, as they are often required to take on additional work until replacements are found, which can lead to feelings of being left behind in an organization that has driven others to resign. The resignation of one employee can bring further losses as others may follow their former colleagues to new opportunities (Felps et al., 2009).

Despite extensive research, there is no universal reason why employees choose to leave their organizations. Turnover represents the movement of employees within the labour market, between companies, jobs, and occupations, and between employment and unemployment (Abassi & Hollman, 2000). The employee turnover rate is defined as the ratio of the number of members who left the organization during a given period to the average number of individuals in that organization over the same period (Price, 1977). Managers often refer to employee turnover as the entire process associated with filling a vacant position: whenever a position is vacated, either voluntarily or involuntarily, a new employee must be hired and trained. This cycle of replacement is known as employee turnover (Kramer, 1995). This term is frequently used to measure the rate at which employees leave an organization, regardless of the reason.

Machine learning algorithms used. Alduayj and Rajpoot (2018) developed multiple machine learning models to predict employee turnover, including random forests, k-nearest neighbours, and support vector machines. They utilized different versions of the IBM HR dataset: the original unbalanced dataset and two synthetically balanced datasets (one over-sampled and one under-sampled). While they achieved high accuracy with the synthetically balanced datasets, the accuracy for the original dataset was low.

Najafi-Zangeneh et al. (2021) introduced a three-step framework for predicting employee turnover. The first step involved data cleaning using the "max-out" variable selection method. In the second step, they trained a logistic regression model for prediction. The third step involved performing confidence analysis to assess the usefulness of the prediction model. Despite these efforts, the model suffered from poor accuracy and high complexity due to extensive pre-processing and post-processing.

Pratt et al. (2021) employed classification trees and random forests for predicting turnover. Prior to classification, they pre-processed the data by removing unwanted variables using Pearson correlation. However, their model showed only a slight improvement in accuracy compared to other machine learning algorithms.

Taylor et al. (2020) used decision tree-based models, including random forests and gradient-boosted trees, to predict employee turnover. These models demonstrated the highest performance. They used their own dataset containing 5,550 records.

Factors contributing to employee turnover. Understanding the factors influencing employee turnover is important for organizations aiming to enhance retention and maintain a stable, productive workforce. These factors can be broadly categorized into individual factors and work-related factors. Each of these factors

interacts in complex ways to influence resigning intentions. By comprehensively examining both individual and work-related factors, organizations can develop targeted strategies to address the root causes of employee turnover and foster a more engaging and supportive work environment.

Individual factors. Individual factors refer to the employees' set of characteristics relevant to employee turnover. These characteristics can be intrinsic, such as an individual's personality, or learned, such as technical aptitudes.

- Gender - in a meta-analysis (Park and Shaw, 2013) it was concluded that there is a similar turnover rate between men and women. Existing literature (Humpert and Pfeifer, 2013) contains empirical proof that older women have a lower turnover rate when compared to men of the same age. Additionally, recent works concluded that women have a higher turnover rate than men (Ono, 2023).
- Age - some researchers demonstrated that the intention of leaving an organization is higher in younger individuals (Pitts et al., 2011). However, in most papers, the intent of leaving is negatively correlated to age (Carmeli and Weisberg, 2006; Ng and Feldman, 2009).
- Tenure - some research papers claim that age is studied in its interaction with tenure (Griffeth et al., 2000). Additionally, the authors claim that a small tenure leads to a higher turnover intention. It has been shown that there exists job instability in the first years of employment (Singh and Schwab, 2000); Marital status - the number of children and responsibilities which come with being part of a family also have impact on an employee's intention of leaving the organization because of the need for stability (Krau, 1981). This is also confirmed by a meta-analysis by Griffeth et al. (2000).

Work-related factors. There are several factors extrinsic to the employee that can affect turnover rates.

- Stress - undoubtedly, stress is one of the most critical factors when it comes to employee turnover. Factors that in turn lead to stress at the workplace are ambiguity of the role, overloading with tasks and the conflict between work time and time spent with the family (Trevor, 2001; Guimaraes, 1997).
- Satisfaction - individuals that are not satisfied at the current job will look for opportunities in other organization (Carsten and Spector, 1987; Silla et al., 2009; Rode et al., 2007).
- Number of work hours - Higgins et al. (2000) showed that a shorter work schedule avoids the conflict of work and family for women, which

leads to greater workplace satisfaction. D'Addio et al. (2007) concluded that for men, the opposite is true, meaning that men with full-time jobs had greater job satisfaction than those with part-time jobs.
- Work quantity - multiple research papers claim that there is a positive relation between the quantity of work, stress and turnover intention (Brannon et al., 2007).
- Promotion - there is a very high correlation between promotion and job satisfaction, which in turn impacts employee retention rates (Pergamit and Veum, 1999; House et al., 1996).
- Salary - the salary variable has a modest impact over the turnover decision according to Griffeth et al. (2000). They concluded that when high-performing employees are not rewarded appropriately, they leave the organization.
-

3. The Research Hypotheses

To confirm or reject the importance of the factors identified following the literature review, we have formulated two research hypotheses.

Although it is a factor that has obtained contradictory results, most studies (De Cuyper et al., 2009; Rode et al., 2007) support the notion that low job satisfaction is an important determinant in the decision to resign. Individuals with low job satisfaction are more likely to resign.

High-performing employees are often sought after by other companies and may receive more attractive and better-paid offers. They may view these opportunities as career advancements and may decide to resign to take advantage of these benefits. High-performing employees are constantly seeking opportunities for development and professional growth (Prince, 2005). If they feel that their current job does not provide enough learning and progression opportunities, they may seek alternative work environments that offer more chances for development and skills enhancement. High-performing employees are more likely to resign.

The lack of promotion opportunities for employees can lead to the loss of valuable talent for the organization (Eyster et al., 2008). When the organization fails to provide career growth and development prospects, talented employees may be tempted to seek other opportunities in companies that offer these benefits. Employees who have not been promoted are more likely to leave the company.

Employees with a heavy workload may be overburdened and face exhaustion and stress

(Brannon et al., 2007). If they do not receive adequate support, such as additional resources or delegated responsibilities, they may reach a point where they feel they cannot cope with the workload and may decide to resign. Employees with a heavy workload are more likely to resign.

Employees who are relatively new and have a short tenure in the company are not as connected and involved in the organization's culture and values (Singh & Schwab, 2000). Without a strong connection, they may be less motivated to remain with the company in the long term and may be more open to exploring other job opportunities. Employees with a short tenure in the company are more likely to resign.

Although salary is no longer the primary decision-making factor when it comes to a job, it is still considered an important factor. There is research suggesting that salary level may play a role in an employee's decision to leave a job (Silbert, 2005). Employees with lower salaries may be more motivated to seek other opportunities that offer a competitive salary. Employees with a lower salary level are more likely to resign.

Based on the aforementioned, we formulated the following hypothesis:

Hypothesis 1: Employees more that are more likely to leave the company are those with low satisfaction, high performance, heavy workload, lack of promotion, short tenure, and low salary level.

After analyzing several studies (Usha & Balaji, 2019; Fallucchi et al., 2020) that applied machine learning algorithms to predict employee turnover, we observed that decision trees were included in all these studies and had good classification performance. Other researchers (Pratt et al., 2021; Taylor et al., 2020) have shown that random forest performs even better considering it is composed of multiple decision trees. Thus, we formulated the following hypothesis:

Hypothesis 2: The random forest algorithm provides the best performance in classifying resignation decisions.

These hypotheses represent preliminary statements based on the analysed literature, providing a framework for investigating the relationship between different factors and employee turnover, as well as determining the tree-based machine learning algorithm that will provide the best performance in classifying the decision to leave the company.

4. Methodology

For achieving the purpose and objectives of this paper, two tree-based machine learning algorithms were used: decision trees and random forest.

For determining the performance of the algorithms, multiple evaluation metrics were used. First, classification *accuracy* was used for measuring the overall correctness of the predictions made by the models. Additionally, *recall*, *specificity* and *precision* were also used as evaluation metrics to assess the algorithms' capability to distinguish between positive and negative instances. To account for the trade-off between sensitivity and specificity, the *ROC curve* and its associated index, *AUC*, were also used.

Decision trees. The decision tree algorithm is particularly useful for classification tasks because it can handle both categorical and numerical data and is relatively easy to understand and interpret (Hastie et al., 2009). In addition, decision trees can be visualized, which helps in understanding the decision-making process.

Random forest. In the case of random forest, some data may be used multiple times in training classifiers, while others may never be used. Thus, greater stability of the classifier is achieved, as it becomes more robust to slight variations in the input data, and at the same time increases the classification accuracy Breiman (2001). Several studies have shown that bagging-based methods such as RF, unlike other boosting-based methods, are not sensitive to noise or overfitting (Briem et al., 2002; Chan and Paelinckx, 2008; Pal and Mather, 2003).

5. Empirical analysis

In this chapter, we present the empirical analysis conducted using a dataset which includes detailed information on both current and former employees. We investigate the effectiveness of decision tree and random forest algorithms in predicting employee turnover.

Database structure. The database on which we will perform the analysis contains details about approximately 15000 employees of a company in the United States of America. The information in this database was collected by the company's human resources department in order to find out the reasons why employees leave the company.

The database contains 10 employee characteristics which are described as such:

- satisfaction_level: employee satisfaction score from surveys, which ranges from 0 to 1;
- last_evaluation: the score the employee received in the last evaluation, which varies between 0 and 1;
- number_projects: the number of projects in which the employee is involved;

- average_monthly_hours: the average number of hours the employee worked in a month;
- time_spent_company: number of years the employee has been in the organization;
- work_accident: whether or not the employee had an accident at work;
- promotion_last_5years: whether the employee had a promotion in the last 5 years or not;
- salary: for privacy reasons, the salary is in divided in three levels: low, medium and high;
- left: if the employee left the company or not.

Exploratory data analysis

We began the analysis by doing a descriptive analysis of the database, as in figure 1.

```
  satisfaction      review          projects       avg_hrs_month
Min.   :0.090000  Min.   :0.360000  Min.   :2.00000  Min.   : 96.00
1st Qu.:0.440000  1st Qu.:0.560000  1st Qu.:3.00000  1st Qu.:156.00
Median :0.640000  Median :0.720000  Median :4.00000  Median :200.00
Mean   :0.612834  Mean   :0.716102  Mean   :3.80305  Mean   :201.05
3rd Qu.:0.820000  3rd Qu.:0.870000  3rd Qu.:5.00000  3rd Qu.:245.00
Max.   :1.000000  Max.   :1.000000  Max.   :7.00000  Max.   :310.00

    tenure         accident  left      promoted      department       salary
Min.   : 2.00000  0:12830  0:11428  0:14680  sales     :4140  high   :1237
1st Qu.: 3.00000  1: 2169  1: 3571  1:  319  technical :2720  low    :7316
Median : 3.00000                             support   :2229  medium :6446
Mean   : 3.49823                             IT        :1227
3rd Qu.: 4.00000                             product_mng: 902
Max.   :10.00000                             marketing : 858
                                             (Other)   :2923
```

Figure 1: Database Description

We can see that the variables "accident", "left", "promoted", "department" and "salary" are categorical variables, and the rest of the variables are numerical. No variables in the dataset have missing values.

In the descriptive analysis (figure 1) we can see the means and the measures of dispersion for numerical variables, and for categorical variables we can see their frequency. For example, we observe that the average employee satisfaction is 0.61, and the average evaluation score is 0.71. We see that out of the total number of employees, only 319 were promoted. We notice that although the satisfaction score can take values between 0 and 1, there are no employees who have a satisfaction score equal to 0. Although the lowest score recorded for this variable is 0.09. And the score obtained in the evaluation can take values between 0 and 1, but the lowest score obtained by employees is 0.36. On average, an employee has been with the company for 3 and a half years, however, there are employees who have been with the company for 10 years.

Results

This section will showcase the outcomes achieved through the implementation of the two tree-based algorithms: decisions trees and random forest.

Figure 2 summarizes the values for each of the performance metrics for all created models.

Three decision trees were built using different techniques, the first tree did not have any constrains, the second was pre-pruned and the third tree has been post-pruned. The first decision tree, the most complex, presented the best performance. The pre-pruned tree, designed for simplicity, showed the worst performance. Finally, the post-pruned tree achieved a good level of accuracy with low complexity.

Algorithm	Accuracy	Sensitivity	Specificity	AUC
DT	0.972	0.9132	0.9904	0.972
DT pre-pruned	0.95	0.9197	0.9595	0.966
DT post-pruned	0.9569	0.9160	0.9697	0.964
RF	0.9904	0.9636	0.9988	0.994
Simplified RF	0.9896	0.9608	0.9985	0.994

Figure 2 Models performance

The post-pruned decision tree, although it has a lowest accuracy in comparison to Random Forest models, offers the advantage of being less complex and easier to interpret. Its simplicity and transparency make it a viable option for organizations that want a better understanding of how factors influence the employee's decision to resign.

The random forest algorithm was initially trained without specifying any parameters and 500 decision trees were obtained. Analysing the connection between the number of trees in the random forest and the error, it was concluded that after 100 trees the error no longer decreased significantly. Consequently, we built another random forest with 100 trees, it achieved a slightly lower performance, but close to the one achieved by the more complex random forest. Given its reduced complexity and good performance, the second random forest was chosen as the more appropriate model of the two.

In all evaluation metrics, the random forest algorithm had the best classification performance.

In the forthcoming subchapters, we will detail the implementation of the selected model for each algorithm.

Decision trees. Out of all the built DTs, the post-pruned version performed the best. To decide which complexity parameter to use we plotted the relative error and the complexity parameter, as in figure 3.
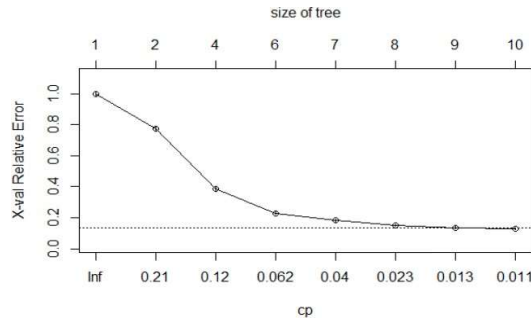
Figure 3. Relative error based on complexity parameter

We can see in the figure that once the 0.04 threshold is passed, the relative error does not decrease significantly. As such, the complexity parameter chosen is 0.04. The resulting DT is represented in figure 4.
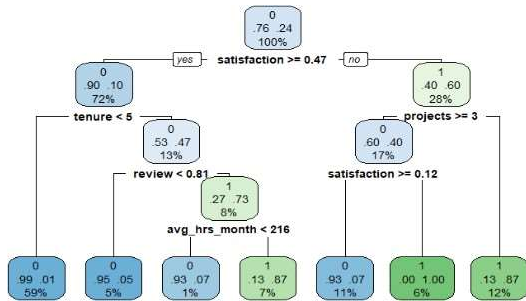

Figure 4 Decision tree with optimal complexity parameter

The obtained decision tree has 13 nodes of which 7 are leaves and it has 4 levels.

A detailed view of the classification matrix and evaluation metrics of this tree can be seen in figure 5.


```
                Reference
Prediction    0      1
         0   3324    90
         1    104   981

                Accuracy : 0.9569
             Sensitivity : 0.9160
             Specificity : 0.9697
          Pos Pred Value : 0.9041
          Neg Pred Value : 0.9736
       Balanced Accuracy : 0.9428
```

Figure 5 Classification matrix and evaluation metrics for the optimal DT

To see how well the decision tree differentiates the two classes we will analyse the AUC index and the ROC curve.
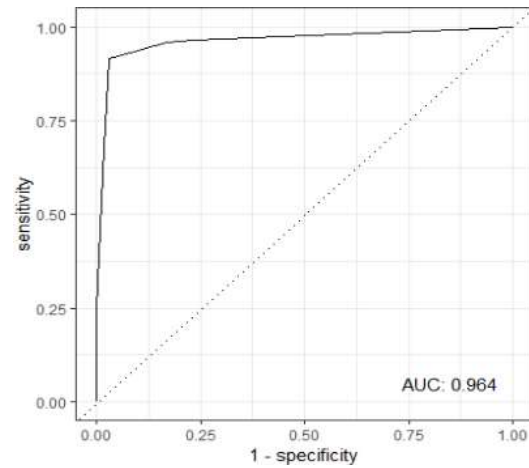

Figure 6. ROC curve and AUC index for the optimal DT

As per figure 6, the value of the AUC index is lower compared to the pre-pruned DT. This is most likely due to the lower sensitivity. The value of the AUC index of 0.964 is quite close to the value of 1, which means that the decision tree manages to differentiate between the two categories well. And the fact that the ROC curve is close to the upper left corner indicates the same thing.

Random forest. Initially we created a random forest without specifying the parameters which resulted in a random forest of 500 trees. To see if it is possible to reduce the complexity of the model, we created a graph (figure 7) with the error and the number of trees from the random forest.
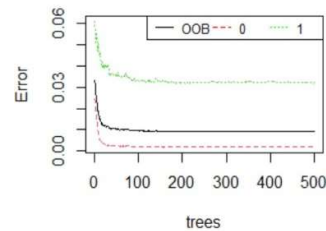
Figure 7. Random Forest error level relative to the number of trees

In figure 7 we have the incorrect classifications recorded on the data that were not used in the creation of the trees, in addition we have these incorrect classifications divided by classes. It can be seen that after approximately 100 decision trees the overall classification error as well as the classification error by classes does not decrease significantly. So, it is redundant to have 400 more trees if they don't help with increasing the performance. Thus, a new random forest with 100 decision trees was created to verify if a similar performance can be obtained with less complexity.

```
Call:
 randomForest(formula = left ~ ., data = train.data, importance = T,
              ntree = 100)
              Type of random forest: classification
                    Number of trees: 100
No. of variables tried at each split: 3

        OOB estimate of  error rate: 0.95%
Confusion matrix:
      0    1 class.error
0 7983   17   0.002125
1   83 2417   0.033200
```

Figure 8 Training results for random forest with 100 trees

In figure 8 we can see that the misclassification rate on OOB data is 0.95%. The rate of the class with employees who did not resign is 0.21%, and the rate of the class of employees who resigned is 3.3%. Overall, the decreased complexity did not have a significant effect on performance, at least in the case of OOB data. Next, we will look at the performance on the testing dataset.

```
              Reference
Prediction    0     1
         0 3423    42
         1    5  1029

            Accuracy : 0.9896
         Sensitivity : 0.9608
         Specificity : 0.9985
      Pos Pred Value : 0.9952
      Neg Pred Value : 0.9879
   Balanced Accuracy : 0.9797
```

Figure 9 .Random forest classification matrix and evaluation metrics

The accuracy obtained on the training set is 99.9%, being very close to that obtained on the testing set, which means that the model maintains its performance on new data (figure 9). Accuracy on the testing dataset dropped very slightly from 99% to 98.96% in comparison to the first random forest model build. The same applies to sensitivity and specificity, which are very close to those of the previous model. Reducing the number of trees from 500 to 100 did not affect performance much.
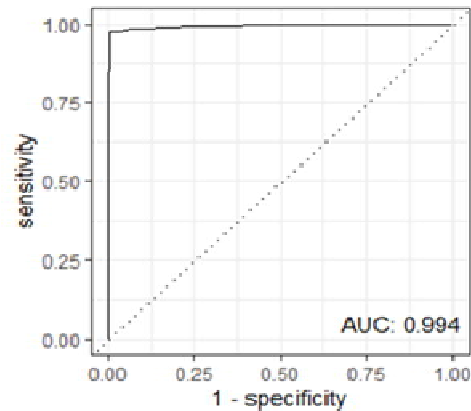

Figure 10: ROC curve and AUC index for the simplified Random Forest

The fact that the ROC curve is so close to the top left corner and the AUC index of 0.994, it is very close to 1, indicates that the random forest model is highly effective at distinguishing between the employees who left the company and the employees who didn't.

5. Research Hypotheses Validation

In all evaluation metrics, the random forest algorithm has demonstrated the best classification performance. Thus, hypothesis 2, which states that the random forest algorithm provides the best performance in classifying employee turnover, is validated. The decision tree, although having a week accuracy compared to Random Forest, offers the advantage of being less complex and easier to interpret. Its simplicity and transparency make it a viable option for organizations seeking a better understanding of how factors influence employee turnover.

Based on the results provided by the decision tree, we could identify the relationships between factors and the decision to resign. There is an inverse relationship between the independent variable satisfaction and the dependent variable. Meanwhile, there is a direct relationship between the independent variables average number of hours worked per month, score obtained in the last evaluation, tenure, and the dependent variable. The categorical variables are excluded from the model, indicating they are not significant in predicting employee turnover. Factors such as promotion and salary do not impact the model's predictions. Thus, hypothesis 1, which suggests that employees predisposed to resign are those with low satisfaction, high performance, heavy workload, lack of promotion, short tenure, and low salary level, is partially validated. The hypothesis states

that employees who were not promoted and have low salaries are more likely to leave the company. However, in our decision tree model, these factors did not demonstrate significant importance.

Overall, the hypotheses developed at the beginning of the research are partially validated. Random forest stands out for its superior performance, while decision tree haves presented different strengths and weaknesses. The choice between decision trees and random forest depends on the organization's preference for model complexity and interpretability, as well as its performance.

6. Conclusion

A high employee turnover rate is an important problem for companies. Losing performant employees is considered a major loss. Finding replacements with a similar level of performance is difficult and costs the company both money and time. The main objective of this research was to identify factors that influence staff turnover and develop a robust classification model using tree-based machine learning algorithms to predict employee turnover based on their characteristics.

Employees who experience low job satisfaction, high performance, heavy workloads, and short tenure are more likely to leave their current company. Low job satisfaction can lead to disengagement and a lack of motivation, making employees more inclined to seek opportunities elsewhere where they feel more valued and content. High-performing employees, if not adequately recognized or rewarded, may feel unappreciated and overburdened, prompting them to look for environments that offer better acknowledgment of their contributions. Heavy workloads can lead to burnout and stress, pushing employees to search for positions with more manageable demands. Lastly, employees with short tenure might feel less attached to the company and more willing to leave if they perceive better opportunities elsewhere.

Regarding the empirical analysis performed via two tree-based machine learning algorithms, the results showed that random forest has the best performance in the classification of the resignation decision, having clearly superior results in different evaluation metrics. The decision tree presented a slightly lower accuracy compared to the random forest, but it offers the advantage of simplicity and ease of interpretation. This trade-off between performance and interpretability should be considered when selecting the most suitable model for practical implementation. The simplicity of the model can be particularly beneficial for organizations looking for an easy-to-understand representation of their decision-making process.

Overall, this paper provided insights into the factors influencing the resignation decision and developed predictive models using decision trees, random forest and neural networks. Its findings lay the foundation for future research to deepen the dynamics of staff turnover, explore new data sources, develop strategies to mitigate staff turnover and promote a positive work environment.

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EMPIRICAL STUDY ON EURO CURRENCY CONFIDENCE UNDER GLOBAL CHALLENGES

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ABSTRACT

The link between the euro currency and globalisation is an essential component of economic integration, enabling smoother trade and investment among member states of the European Union since its beginning. The integration has not only increased commerce inside Europe but also had a substantial influence on the global economy. The euro's impact reaches into worldwide banking, commerce, and political dynamics, highlighting the interdependence of global economies and the significance of public perception in maintaining the stability of the euro. The paper will use data mining methods, namely decision trees and neural networks, to examine the factors that influence the perception of the euro among citizens of Eurozone member states in 2019 and 2022. The selected years were intentionally chosen to compare the attitudes before the pandemic with the changes caused by the COVID-19 epidemic. In 2019, the perceptions were observed in a stable economic and social context, whereas in 2022, the effects of the pandemic, such as economic shocks and recovery attempts, were analysed. This study is essential for detecting changes in public opinion resulting from the epidemic, assisting policymakers and the European Central Bank in formulating ways to strengthen support for the euro. Gaining insight into these perspectives may result in the development of policy-making that is more inclusive, by resolving inequities among member states or demographic groups and guaranteeing the long-term stability of the currency.

Keywords: Euro, economic perceptions, CART algorithm, Neural networks, Eurobarometer, European Union

JEL Classification: D91. Role and effects of psychological, emotional, social, and cognitive factors on decision making

1. Introduction

Since its inception, the euro, which serves as the common currency of the European Union, has elicited discussions and deliberations. Divergent viewpoints exist regarding the aforementioned currency. In order to formulate efficacious strategies aimed at bolstering the euro, policymakers are tasked with scrutinizing the perspectives of European Union residents. The present study will utilize a machine-learning algorithm to scrutinize the factors that influence this perception during the years 2019 and 2022. The algorithmic approach enables the examination of extensive datasets to uncover trends, scrutinize both qualitative and quantitative data, and ascertain correlations among diverse variables.

2. Literature review

The social and cultural construction of money extends beyond its tangible form as a facilitator of transactions of products and services. Adam Smith (1776) acknowledged this concept in his renowned work, "The Wealth of Nations."Wimmer (2018) posited that a sense of allegiance and emotional attachment to one's nation can be represented through the concept of the "Community Chest." Simmel (2005) highlighted that cultural and social contexts play a pivotal role in shaping individuals' perceptions of money. Consequently, the significance of money transcends its monetary value, serving as a potent symbol of culture and society (Holton and Turner, 2010, pp. 75-77), thereby embodying a representation of the state (Genschel and Jachtenfuchs, 2017).

A nation's currency acts as a significant indicator of the worth and financial stability of a nation or community (Helleiner, Dezalay, and Garth, 2003; Negri, Nicoli, and Kuhn, 2020). It can be linked to national identity as a means of expressing values and traditions (Holton and Turner, 2010, pp. 75-77; Risse, 2003). The robustness of a nation's currency can signify its reliability and assurance, thereby establishing a foundation for national identity (Leblond, 2003). The Swedish krona, the Danish krone, and the former German mark serve as

exemplary instances of stable currencies with a rich history of economic and political steadiness (Hobolt and Leblond, 2009). Research indicates that even post the introduction of the euro by the German government in 1999, Germans retained a level of skepticism towards the euro, illustrating the aforementioned point (Isengard and Schneider, 2006; Risse, 2003).

A currency zone denotes a geographical region where member nations synchronize monetary policies, utilize a common currency, boost international trade, and bolster economic stability (Baldwin and Wyplosz, 2020, pp.350-354). The eurozone represents a monetary coalition of 20 EU member states employing a unified euro currency, aimed at advancing the level of European integration initiated in 1990 (European Central Bank, 2023). The introduction of the euro has led to the eradication of currency fluctuations among member nations, an uptick in trade, and simplified travel across the eurozone (Genschel and Jachtenfuchs, 2017). This study aims to scrutinize how citizens within the Eurozone perceive the euro and the factors influencing this perception.

The initial categories of factors that can impact currency perception encompass demographic variables like gender, age, level of education, and occupation. According to existing literature, older individuals tend to harbor more skepticism towards the euro and may harbor a sense of nostalgia for their previous national currency (Banducci et al., 2009). Educational attainment can significantly mold individuals' views of the euro. Those with higher levels of education are more inclined to identify with the European Union and consider membership as an integral aspect of their identity (Isengard and Schneider, 2006). Individuals employed in economic sectors tend to view the euro more favorably due to their understanding of the economic advantages it brings (Bergbauer et al., 2020).Various social and cultural factors have the potential to exert influence on individuals' perceptions of the euro. Some individuals may consider the adoption of the euro as a threat to their national identity and cultural heritage (Leblond, 2009), while others may view it as an avenue to enhance European unity and reap the advantages of a unified market economy (Negri, Nicoli and Kuhn, 2020). The degree of confidence in one's government can also play a role in shaping attitudes towards the euro, albeit the extent of this influence varies across different nations (Roth and Jonung, 2022). Research conducted by Bergbauer et al. (2020) demonstrates that the economic prowess and governmental authority of a nation can impact individuals' perceptions of the euro.

This study seeks to illustrate the considerable impact of three distinct categories of variables (demographics, national governmental efficacy, and individuals' economic outlook) on the perceptions of the euro held by residents of the euro area. The study puts forward three primary conjectures, which it aims to validate or invalidate via empirical investigation:

H1: The perceptions of Eurozone citizens regarding the euro are impacted by various demographic factors.

H2: The performance of national governments plays a significant role in shaping the perception of the euro among individuals.

H3: The economic expectations of people are a key determinant in influencing how the euro is perceived.

In addition, the paper intends to identify the profiles of people who have a negative opinion, in order to identify groups that should be given more attention on this issue.

3. Methodology

3.1. Data used

This paper uses data from the 2019 and 2022 Flash Eurobarometer surveys conducted in Eurozone nations. The Eurobarometer surveys public opinion in EU member states, targeting individuals aged 15 and above, with a typical sample size of 1,000 per country, except smaller nations like Luxembourg or Malta. The surveys compare sample compositions to population demographics using post-stratification proportions (w1) to ensure accuracy. These proportions adjust the significance of each participant's data based on their country's population, age, gender, and profession, using data from National Research Institutes and EUROSTAT. This method enhances the precision and representativeness of the survey results.

3.2. Algorithm CART

CART stands for Classification and regression trees, initially introduced by Breiman in 1996. It operates by iteratively partitioning the data into multiple subspaces to ensure that the outcomes in each final subspace are as similar as possible. This technique is referred to as recursive-partitioning (Berk, 2008). Characteristics of CART trees (Berk, 2008): capable of managing extensive datasets; capable of managing small implicit predictors; numerical and categorical; easily disregards redundant variables; manages missing data through surrogate divisions; simple to interpret small trees; challenging to interpret large trees.

Another point to note about this algorithm is that it also provides the importance of the variables included in the model. In the CART tree, the importance of a variable is measured by taking into account its contribution to the reduction of variation in the child leaves, relative to the variation specific to the parent node from which they originate. Specifically, the importance of a variable is most often quantified using the cumulative Gini index at the tree level, depending on the relationship (Tahsildar, 2019):

$$Gini = \sum_{i=1}^{n} p_i^2 \qquad (1)$$

Where p_i is the probability that an instance is classified in a certain category.

Gini Impurity, used for splitting nodes when the target variable is categorical, is calculated as 1 minus Gini (Sharma, 2020). A lower score indicates purer nodes. The more important a variable, the purer the resulting nodes, thus lowering Gini Impurity. Significance is determined by the factor's ability to reduce diversity and create refined subcategories.

Trees were also produced using the CART algorithm using all three aggregate samples simultaneously, with the minority category replicated three times.

Balancing Methodology for CART algorithm - In order to ensure the most accurate analysis, "don't know" or "didn't answer" responses were removed from the target variable responses. Since the target variable perception_n (questionnaire q1_1) has the structure shown in Figure 1, the analyses were performed on several balanced samples.In order to obtain the validation set, a 30% sample was extracted from the original data, preserving the original structure of the target variable. The training set was split into three samples, keeping the minority category unchanged and splitting the majority category randomly into three samples. This resulted in a percentage around of 50% for the majority category and around 40% for the minority category. The weighting variable w1 described above was also included in the trees produced.
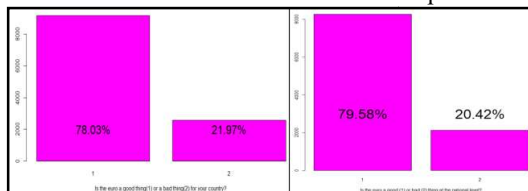

Figure 1. Distribution of target variables for 2019 and 2022

Source: personal processing in Rstudio

Survey responses on economic matters were transformed for clarity: negative views got negative values, neutral responses got 0, and positive views got positive values. Principal Component Analysis identified four economic frameworks. Decision trees were created to pinpoint key variables, validated by the Random Forest technique. Table 1 shows total and average variable significance across samples.

Using the average importance percentages, weights were created to achieve average scores for each construct at the level of each instance. These variables, called constructs (C), represent weighted aggregations of variables that can be seen in Table 1. This was done using the following formula:

$$c_{in} = \sum_{1}^{j} Q_{ji} * p_j \qquad (1)$$

Where:i - is the instance number; n - is the component number; j - represents the question number (question code); Q_{ji} - represents the answer of instance "i" to the question; p_j- represents the weighting value obtained by hierarchically weighting the variables

Discretization of variables was done in R Studio using the "rules" package's discretize() function, specifically the "cluster" method with the k-means algorithm to create categories. This method ensures high homogeneity within intervals (Fonseca, 2019). The categorized variables are plotted in Figure 2.

The CART algorithm was used to train decision trees for each of the three samples. Table 2 presents the explanatory variables' relative magnitudes and performance. Demographic variables were analyzed separately using the same methodology, with results shown in Table 3. Finally, trees combining all constructs and important demographic variables were created using the CART algorithm, with results displayed in Table 4.

3.3. Neural networks

Neural networks are mathematical models inspired by the human brain, used in machine learning and AI. They consist of artificial neurons connected by synaptic weights, organized into layers: an input layer, one or more hidden layers, and an output layer. Data flows through these layers, processed from input to output, producing the final result (Dongare, Kharde, and Kachare, 2008).

This study implemented neural networks using the RSNNS package in R, a comprehensive library for building and training neural networks in R. The number and size of hidden layers depend on the problem's complexity and the network architecture (Uzair and Jamil, 2020). More hidden layers can enhance learning and capture complex relationships but require more data, training time, and technical resources. By adjusting synaptic weights and learning from the training dataset, neural networks can recognize patterns, make predictions, and solve tasks in classification, regression, image recognition, natural language processing, and more (Schmidhuber, 2015). Multilayer Perceptron (MLP) neural networks, a type of feedforward neural network, consist of several hidden layers between the input and output layers (Zare et al., 2012). Each neuron in the hidden layer uses a nonlinear activation function to process inputs, introducing non-linearities that allow the MLP to model complex relationships.

Various activation functions were used, including Rprop (Resilient Backpropagation), Quickprop, SCG (Scaled Conjugate Gradient), Backprop Weight Decay, Backprop Momentum, Std_Backpropagation, and BackpropBatch, as described by Taud and Mas (2017) and Jurgen et al.
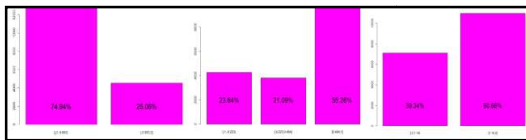

Figure 2. Distribution of the constructs for 2019
Source: personal processing in Rstudio

(2014), to train and optimize the neural networks.
The libraries used to implement neural networks in Rstudio are RSNNS (used for artificial neural networks), caret (evaluating and comparing machine learning models), NeuralNetTools (visualize and analyze neural networks), ggplot2 (for graphs).The categorical variable "country" was converted into binary dummy variables, representing each country as 1 or 0. Dataset normalization was performed to ensure optimal neural network performance by reducing feature variation and preventing gradient issues. Various neural network structures were tested, and the best models are shown in Table 5. Automatic parameter optimization was used to enhance model performance.

The Olden method, based on Garson's algorithm but improved, determines variable importance in neural networks (Garson, 1991). It calculates importance by summing the products of

connections between input, hidden, and output layers, preserving both magnitude and sign. Unlike Garson's, it handles multiple hidden layers and avoids misleading absolute magnitudes, focusing on relative contributions and sign changes.

4. Results

4.1. CART results

Results by construct

Table 1 in the Annexes reveals the cumulative and average importance of explanatory variables for each construct in 2019 and 2022, assessed via decision trees using the CART algorithm. In the Institutional Reforms framework, 2019-2022 saw increased emphasis on education, workforce market, and major systemic reforms, while healthcare and retirement reforms declined in priority. For Travel and Business Facilitation, affordable travel remained important, while price comparison became less significant, with a growing focus on reducing fees and improving business processes. The Payment Methods framework showed a significant shift from currency and paper money transactions to electronic payment methods, reflecting changing consumer preferences and payment innovations. Average significance percentages were used to determine the combined importance of factors at the concept level, labeled as c_1, c_2, and c_3, and discretized accordingly. Figures 2 and 3 display the distributions of these concepts for 2019 and 2022.
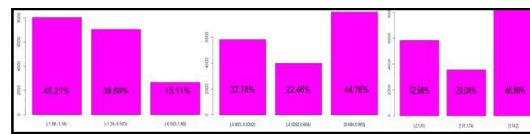
Figure 3. Distribution of the constructs for 2022
Source: personal processing in Rstudio

Table 2 in the Annexes highlights the significance of the frameworks and efficacy measures using the CART technique on each sample. In the 2019 sample I, C2 was dominant with 97% importance, achieving 71.5% accuracy, 76.60% sensitivity, and 56.07% specificity. C3 had minimal impact at 3%. By 2022, C2 was solely important at 100%, with 68.73% accuracy, 72.41% sensitivity, and 55.25% specificity, indicating a strong focus on travel and business facilitation in Sample I. In sample II (2019), C2 held 87% importance, with 64.93% accuracy. C3 and C1 contributed 11% and 2%, respectively. By 2022, C2's importance rose to 97%, with C1 and C3 at 2.5% and 0.5%. Accuracy

improved to 67.55%, with 70.05% sensitivity and 58.42% specificity, showing a refined focus on travel and business in Sample II. For sample III (2019), C2 had 87% importance, resulting in 64.93% accuracy. C3 and C1 contributed 11% and 2%, respectively. In 2022, C2's importance slightly decreased to 92%, while C3 and C1 increased to 4%. This led to 65.88% accuracy, 67.50% sensitivity, and 59.96% specificity, indicating a more balanced influence from all constructs in Sample III. From 2019 to 2022, C2 consistently held the highest importance, underscoring its role in shaping perceptions about the euro. Performance metrics showed slight improvements, reflecting a refined understanding of public perceptions based on these constructs.

Demographic variables

In table 3 from Annexes, in 2019, Sample I showed the country as the most important variable at 42%, followed by the age at the end of studies at 36%. The model had moderate accuracy (62.99%) and balanced sensitivity (64.36%) and specificity (58.90%). Sample II highlighted the age at the end of studies (46%) and country (30%) as key factors, with an accuracy of 64.68% and higher sensitivity (67.71%) compared to specificity (55.55%). Sample III similarly emphasized the country (44%) and age at the end of studies (42%), achieving 64.62% accuracy and 67.99% sensitivity, but lower specificity (54.49%). By 2022, the importance of the country increased significantly in Sample I to 68%, with age at the end of studies at 30%. The model's accuracy dropped slightly to 59.69%, with improved specificity (62.86%) but lower sensitivity (58.80%). In Sample II, the age at the end of studies remained important at 56%, with the country at 37%, maintaining similar performance metrics with an accuracy of 64.11% and a sensitivity of 67.39%. Sample III saw the age at the end of studies (48%) and country (41%) as dominant factors, with improved accuracy (67.56%) and sensitivity (74.17%), but reduced specificity (43.89%). Overall, from 2019 to 2022, the country and educational attainment gained importance in influencing euro perceptions. While accuracy and sensitivity generally improved, specificity varied, reflecting changes in the model's ability to correctly identify negative perceptions.

Final analysis with CART algorithm

In Table 4 from Annexes, the results of applying the CART algorithm on each of the three samples using the previously selected demographic constructs and variables are presented. The table shows the importance of the variables and the performance indicators obtained for each sample. In addition, an average value is provided for each of the important variables and performance indicators. In 2019, Sample I showed that Construct II (C2: Travel and Business Facilitation) was most important at 62%, followed by the country at 23%. The model had an accuracy of 71.7%, sensitivity of 76.51%, and specificity of 57.25%. Sample II also emphasized C2 at 70%, with age at the end of studies at 18% and country at 12%, achieving 67.78% accuracy. In Sample III, C2 was essential at 59%, with the country at 29%, resulting in 70.08% accuracy. Across all samples, C2 was the dominant factor in predicting euro perceptions.

4.2. Neural network results

In 2019, Network 13 using BackpropBatch had the best performance with an F1 score of 0.8612, accuracy of 75.99%, sensitivity of 76.29%, and specificity of 63.39%. In 2022, the same Network 13 maintained superior performance with an F1 score of 0.8507, accuracy of 78.7%, sensitivity of 78.76%, but with reduced specificity at 44.44%. Overall, BackpropBatch remained the most effective learning method for Network 13, although its specificity decreased in 2022, indicating an increase in false positive identifications. The results and the values of importance associated with each independent variable form the Network 13 are presented in Figure 4.

In the 2019 graph (left side of Figure 4), C2 is the most important variable positively impacting perceptions of the euro. Following C2, Ireland (IE), Luxembourg (LU), Finland (FI), and the age at the end of studies also show significant positive importance. Construct III (C3: Payment Methods) and several other countries, such as Austria (AT), Estonia (EE), Germany (DE), and Portugal (PT), also contribute positively but to a lesser extent. Variables like age, France (FR), Italy (IT), Cyprus (CY), and Belgium (BE) have minimal to slightly negative importance, indicating they have a less favorable or neutral impact on perceptions of the euro.

In the 2022 graph (right side of Figure 4), C2 again emerges as the most important variable positively influencing euro perceptions, reinforcing its dominant role. Ireland (IE) and the age at the end of studies follow in importance, with Construct III (C3) and countries like Slovakia (SK), Estonia (EE), and France (FR) contributing positively. However, the negative impacts are more pronounced in 2022, with Cyprus (CY), Construct I (C1: Institutional Reforms), and several other

countries such as Luxembourg (LU) and Italy (IT) showing significant negative importance. This suggests a shift where certain demographic and regional factors have started to negatively affect euro perceptions more strongly compared to 2019. Comparing the two years, C2 consistently holds the highest positive importance, indicating that travel and business facilitation remain key factors in shaping favorable perceptions of the euro. The influence of individual countries and demographic variables like age at the end of studies is also significant in both years but with some shifts in their relative importance. In 2022, negative influences are more pronounced, especially from specific countries and C1, suggesting growing regional and institutional concerns affecting euro perceptions. This change highlights evolving public attitudes and possibly emerging economic or political factors influencing the currency's perception.
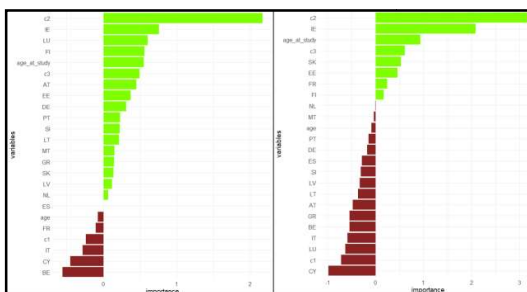

Figure 4. Importance of independent variables in the MLP network 13
Source: personal processing in Rstudio

Conclusion

Since its inception, the euro has sparked various discussions regarding its impact and efficacy as the common currency of the European Union. This study uses a machine-learning algorithm to analyze the factors influencing perceptions of the euro in 2019 and 2022. The goal is to provide insights for policymakers to enhance strategies supporting the euro by examining extensive datasets for trends and correlations among diverse variables.

The analysis shows that demographic variables like age, educational attainment, and country have significant impacts on euro perceptions. In both 2019 and 2022, variables like the age at the end of studies and specific countries (e.g., Ireland, Luxembourg) were influential. In 2022, the importance of certain demographic factors like age at the end of studies and specific countries increased, highlighting evolving public attitudes towards the euro. This supports H1, indicating that demographic factors indeed play a serious role in

shaping perceptions. C2 consistently emerged as the most important factor in both years, emphasizing the role of knowing the advantages of euro related to travel and business in shaping positive perceptions of the euro. This construct's increasing importance from 2019 to 2022 suggests that the economic expectations of people are a key determinant in influencing how the euro is perceived, validating H3. In 2022, negative influences from specific countries and C1 (Institutional Reforms) became more pronounced. This shift suggests growing regional and institutional concerns impacting perceptions, indicating areas where policymakers need to focus their efforts to improve the euro's acceptance. Also, suggests that efficient national policies positively impact euro perceptions, validating H2. Moreover, the varying importance of different countries in influencing perceptions underscores the role of national government performance.

The study's findings validate all three hypotheses, showing that demographic factors, national government performance, and economic expectations significantly influence euro perceptions. The increasing importance of travel and business facilitation policies, along with economic expectations related to payment methods, underscores the need for targeted strategies to address regional and demographic concerns. These insights can help policymakers enhance public support for the euro by focusing on areas that matter most to Eurozone citizens.

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Annexes

Table 1. Cumulative importance of variables in constructs

Construct	Variable	2019		2022	
		AGGREGATE IMPORTANCE	AVERAGE IMPORTANCE (%)	AGGREGATE IMPORTANCE	AVERAGE IMPORTANCE (%)
I.	Education system reforms (Q10.7)	19	4.60%	60.45	9.01%
	Health care reforms (Q10.2)	43	10.50%	16.07	2.39%
	Labour market reforms (Q10.1)	20	4.90%	62.39	9.29%
	Pension reforms (Q10.3)	128	31.40%	47.55	7.08%
	Significant reforms (Q9.1)	111	27.10%	253.78	37.81%
	Social security reforms (Q10.4)	52	12.70%	70.73	10.54%
	Tax system reforms (Q10.6)	14	3.40%	77.83	11.60%
	Utility market reforms (Q10.5)	22	5.40%	82.43	12.28%
II.	Cheaper travel (Q7.1)	411	58.5%	494.70	59.85%
	Ease of comparing prices (Q7.4)	121	17.3%	59.61	7.23%
	Lower commissions (Q7.2)	110	15.6%	192.02	23.28%
	Easier business (Q7.3)	62	8.8%	73.60	8.92%
III.	Payment with coins (Q3a2)	305	60.8%	34.66	51.88%
	Payment with banknotes (Q3a1)	197	39.2%	32.14	48.11%
IV	Number of euro coins (Q4)	44	100%	53	100%

Source: personal processing in Rstudio

Table 2. CART algorithm results by sample for constructs

Sample	Construct	Importance	PERFORMANCE INDICATORS	INDICATOR VALUE
		2019		
I.	C2	97%	Accuracy	71.5%
	C3	3%	Sensitivity	76.60%
			Specificity	56.07%
II.	C2	87%	Accuracy	64.93%
	C3	11%	Sensitivity	64.09%
	C1	2%	Specificity	67.45%
III.	C2	87%	Accuracy	64.93%
	C3	11%	Sensitivity	64.09%
	C1	2%	Specificity	67.45%
		2022		
I.	C2	100%	Accuracy	68.73%
	C3		Sensitivity	72.41%
			Specificity	55.25%
II.	C2	97%	Accuracy	67.55%
	C1	2.5%	Sensitivity	70.05%
	C3	0.5%	Specificity	58.42%
III.	C2	92%	Accuracy	65.88%
	C3	4%	Sensitivity	67.5%
	C1	4%	Specificity	59.96%

Table 3. CART algorithm results per sample for demographic variables

Sample	Variable importance	Importance	PERFORMANCE INDICATORS	INDICATOR VALUE
		2019		
I.	Country	42%	Accuracy	62.99%
	Age at end of studies	36%	Sensitivity	64.36%
	Age	17%	Specificity	58.90%
	Job	5%		
II.	Age at end of studies	46%	Accuracy	64.68%
	Country	30%	Sensitivity	67.71%
	Age	19%	Specificity	55.55%
	Job	4%		
III.	Country	44%	Accuracy	64.62%
	Age at end of studies	42%	Sensitivity	67.99%
	Age	9%	Specificity	54.49%
	Job	5%	Accuracy	
		2022		
I.	Country	68%	Accuracy	59,69%
	Age at end of studies	30%	Sensitivity	58,80%
	Age	1.5%	Specificity	62,86%
	Job	0.5%		
II.	Age at end of studies	56%	Accuracy	64.11%
	Country	37%	Sensitivity	67.39%
	Age	6%	Specificity	52.37%
	Job	1%		
III.	Age at end of studies	48%	Accuracy	67.56%
	Country	41%	Sensitivity	74.17%
	Age	6%	Specificity	43.89%
	Job	5%	Accuracy	

Source: personal processing in Rstudio

Table 4. CART algorithm results per sample

Sample	Variable importance	Importance	PERFORMANCE INDICATORS	INDICATOR VALUE
		2019		
I.	C2	62%	Accuracy	71.7%
	Country	23%	Sensitivity	76.51%
	Age at end of studies	11%	Specificity	57.25%
	C3	4%		
II.	C2	70%	Accuracy	67.78%
	Age at end of studies	18%	Sensitivity	68.78%
	Country	12%	Specificity	64.75%
III.	C2	59%	Accuracy	70.08%
	Country	29%	Sensitivity	72.30%
	Age at end of studies	12%	Specificity	63.42%
		2022		
I.	C2	85%	Accuracy	61.3%
	Country	13%	Sensitivity	59.81%
	Age	1%	Specificity	66.86%
	Age at end of studies	1%		
II.	C2	83%	Accuracy	64.4%
	Country	13%	Sensitivity	64.7%
	Age at end of studies	3%	Specificity	63.25%
	Age	0.6%		
	C1	0.4%		
III.	C2	70%	Accuracy	67.18%
	Country	27%	Sensitivity	70.28%
	Age at end of studies	2%	Specificity	55.62%

Table 6: Retele de tip MLP

Network number	Layer 1	Layer 2	Learning function	Accuracy	Sensitivity	Specificity	F1
1	10	-	Rprop	75.93%	78.75%	52.60%	0.8538
2	13	4		75.51%	79.45%	50.53%	0.8486
3	20	-	Quickprop	76.3%	77.52%	57.63%	0.8600
4	20	14		76.41%	77.97%	56.38%	0.8595
5	15	-	SCG	76.24%	77.26%	58.20%	0.8603
6	15	7		76.62%	79.32%	55.49%	0.8574
7	17	-	BackpropWeightDecay	73.58%	80.47%	45.45%	0.8574
8	18	9		74.31%	80.12%	46.93%	0.8374
9	12	-	BackpropMomentum	72.87%	81.10%	46.41%	0.8309
10	12	8		74.5%	79.89%	47.37%	0.8394
11	19	-	Std_Backpropagation	71.81%	82.13%	43.32%	0.8106
12	15	7		74.56%	80.15%	47.67%	0.8392
13*	17	-	BackpropBatch	75.99%	76.29%	63.39%	0.8612
14	16	8		76.55%	78.52%	56.61%	0.8591

Network number	Layer 1	Layer 2	Learning function	Accuracy	Sensitivity	Specificity	F1
			2022				
1	10	-	Rprop	76.56%	80.84%	39.57%	0.8608
2	13	4		78.37%	79.73%	45.59%	0.8762
3	20	-	Quickprop	77.42%	79.54%	36.92%	0.8700
4	20	14		78.06%	80.11%	44.20%	0.8732
5	15	-	SCG	78.6%	78.77%	33.33%	0.8800
6	15	7		78.7%	78.75%	42.85%	0.8807
7	17	-	BackpropWeightDecay	78.5%	79.18%	44.21%	0.8783
8	18	9		76.15%	81.03%	38.86%	0.8573
9	12	-	BackpropMomentum	68.04%	83.34%	32.11%	0.7852
10	12	8		74.66%	80.56%	33.93%	0.8474
11	19	-	Std_Backpropagation	75.88%	81.29%	38.83%	0.8547
12	15	7		77.32%	80.48%	41.28%	0.8671
13*	17	-	BackpropBatch	78.7%	78.76%	44.44%	0.8907
14	16	8		76.32%	78.48%	42.28%	0.8798

Source: personal processing in Rstudio
*Optimum network

ID: 037

USING LARGE LANGUAGE MODELS FOR INFORMATION SECURITY IN SMALL AND MEDIUM-SIZED ENTERPRISES: SCENARIO-BASED TESTING AND ANALYSIS

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ABSTRACT

This study addresses the pressing need for effective information security measures in small and medium-sized enterprises (SMEs) by examining the capabilities of AI-Powered tools based on Large Language Models (LLMs) in generating recommendations for employees tasked with or interested in information security. The research conducts a structured interrogation of three LLM programs, namely Copilot, ChatGPT, and Gemini, to assess their proficiency in formulating actionable insights relevant to information security practices. Subsequently, the generated recommendations are reviewed by experts in the field of information security. The paper aims to provide insights into the potential of LLMs in enhancing information security strategies within SMEs, thereby contributing to the advancement of cybersecurity resilience in the business sector.

Keywords: information security, Large Language Models, information security awareness, small and medium enterprises, Artificial Intelligence

1. Introduction

Small and Medium-sized Enterprises (SMEs) play a significant role in most economies, particularly in developing countries (World Bank, 2019). Although compared to large corporations they have less than 250 employees and lower revenue thresholds, SMEs represent 90% of all businesses (European Commission, 2024). To perform the activities efficiently and to streamline business operation, SMEs use: e-commerce platforms, Social Media apps, enterprise resources planning (ERP) systems, remote work platforms, etc. Dependence on informational services in the absence of proper security measures makes SMEs vulnerable to various types of incidents caused by natural factors, human errors, improper functioning of hardware/software or attacks.

In this context, Large Language Models (LLMs) can be used as powerful tools for SMEs. They are becoming increasingly complex and able to support various use cases (Iqbal, et al., 2023), and are good at understanding human knowledge and instructions (Zhou, et al., 2024). In this spirit, the paper explores how SMEs can deploy the applications as Copilot, ChatGPT, and Gemini, which work based on LLMs. With this purpose, the different sets of prompts have been created to incorporate common information security issues scenarios and generate relevant information security documents for a SME. The resulted documents have been sent to experts in the information security field. Their assessment of the documents was collected, and the results were discussed.

The paper is structured as follows: Section 2 addresses theoretical concepts of LLMs in relation to Small and Medium-sized Enterprises. Section 3 describes the methodology used to create scenarios and prompts. In section 4 a presentation of the results of the query and interpretation of the answers by the experts is conducted. Finally, the research closes in section 5, with conclusion and direction for future works.

2. Literature review

What are LLMs? Large language models are the result of the combination of natural language processing (NLP), deep learning concepts (DP), and generative AI models (Amaratunga, 2023). These models are typically trained on massive amounts of text data and use deep learning techniques to learn the patterns and structures of language (Usman Hadi, et al., 2023). This information is subsequently used by them to predict the likelihood of a given token, or sequence of tokens, in a specific context (Vidgof, et al., 2023). Constructed upon the foundation of the transformer architecture (Usman Hadi, et al., 2023), LLMs have revolutionized the field of NLP. Therefore, they became general-purpose technologies with far-reaching consequences that unfold over time.
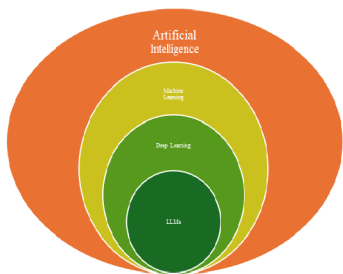
Figure 1: The place of LLMs in the AI landscape

Source: Created by the author based on data from Stöffelbauer (2023)

LLMs are at the base of many AI-based tasks, such as text generation, completion, language translation, text classification, summarization, information extraction, dialog systems, semantic search, speech recognition (Usman Hadi, et al., 2023) chatbots, virtual assistants, code generation, question-answering, sentiment analysis (Huang, et al., 2024) and many other capacities that are currently developing.

In order to benefit from LLMs in their personal and professional life, humans have to understand how LLMs work and format their tasks in a way that LLMs can follow. The major approach to accessing LLMs is through the prompting interface (Zhao, et al., 2023). Piyush (2024) mentions that a prompt is a text that can be a question, a command, a suggestion, or a statement. They are the instructions provided to a LLM to make it follow specified rules, automation of processes and to ensure that the output generated is of a specific quality or quantity (Usman Hadi, et al., 2023). An efficient input text can lead to the achievement of goals. Conversely, a poorly written prompt can confuse the LLM, resulting in hallucinations (Piyush, 2024).

One of LLMs' strengths is their ability to perform few-shot and zero-shot learning with prompt-based learning (Liu, et al., 2023). In the literature, few-shot learning is formally defined as the model is trained to perform tasks with very little labelled data by leveraging its pre-trained knowledge (Amaratunga, 2023). By analogy, in zero-shot learning the model is trained to generalize to tasks without having any labelled data for that specific task, often by understanding the task description in natural language (Amaratunga, 2023). In principle, this style of prompting requires LLMs to answer user questions without seeing any examples in the prompt (Naveed, et al., 2023). In essence, the prompt is an accessible tool to efficiently use language models for a wide range of common or

specific tasks. On the other hand, Jiang, et al., (2023) consider that many tasks require users to go through arduous and time-consuming prompt engineering to produce well-crafted prompts, thereby ensuring results that align with their intents.

In existing literature are mentioned some of characteristics of large languages machines such as pre-training and fine-tuning. Firstly, LLMs begin with a phase known as pre-training, where these models are exposed to a vast and varied dataset of internet text, enabling them to learn grammar, vocabulary, world knowledge, and context (Usman Hadi, et al., 2023). While LLMs are powerful out-of-the-box tools, their full potential can be utilized through fine-tuning, which adapts them to particular tasks beyond their initial training scope (Yamin, et al., 2024). Below, for a clearer insight, it is presented a summarization of the well-known pre-trained LLMs used for this research:

• *ChatGPT (Generative Pre-trained Transformer)* – is a conversational AI system, launched by OpenAI, and one of the largest LLMs (>175 billion parameters) to date (Shen, et al., 2023). It is exceptional at producing human-like responses and having conversations with users (Usman Hadi, et al., 2023) and possessing a vast store of knowledge, skill at reasoning on mathematical problems, tracing the context accurately in multi-turn dialogues (Zhao, et al., 2023).

• *Copilot* – launched by Microsoft, functions as a search engine, integrates OpenAI's ChatGPT 4.0, enabling it to access internet sources for pertinent data retrieval (Uchida, 2024).

• *Gemini* – introduced by Google, a conversational AI anchored in the LaMDA (Language Model for Dialogue Applications) framework. One notable feature of Gemini is its seamless integration with other Google services, including Gmail and Google Collaboratory (Uchida, 2024).

LLMs' use in Small and Medium-Sized Enterprises. In today's competitive landscape, one notable concern for SMEs is the use of LLMs to cover their needs and to gain a strong market presence by reducing costs and providing an excellent customer service. The findings of some studies suggest that LLMs have quickly been adopted within different software and business functions, such as analysing historical data, current trends, and external factors to predict demand fluctuations (Amarasinghe, et al., 2023; Yaiprasert & Hidayanto, 2024).

It is important to notice that LLMs can automate routine and repetitive tasks, and this enables SMEs to streamline their operations, reduce manual labor costs, and increase efficiency (Qureshi, et al., 2023). For example, in the medical service

industry, chatbots can provide real-time online medical solutions to customers (Bates, 2019). Due to their capacity to personalize their outputs, LLMs can generate content such as blog posts, product reviews, and marketing materials. This can save time and resources for SMEs, while maintaining a consistent online presence (Lo, 2023). Another service sector mentioned in the literature is the travel service industry, where AI can analyze large amounts of data and help companies quickly acquire customers and generate travel solutions in real-time, allowing for self-service and quick order completion (Tércio, et al., 2022). Also, they can assist professionals in crafting well-structured and articulated emails or reports (Amaratunga, 2023).

In fact, LLMs support non-expert users to successfully carry out business optimisations without having to consult experts to significantly reduce traditionally required effort (Amarasinghe, et al., 2023). SMEs are found to prioritise business growth over security measures, which makes them more vulnerable to data breaches and other security risks. This observation reveals that LLMs, as a particular subset of AI, have the potential to be utilized in cybersecurity, to solve the challenges in understanding and implementing security measures, and underestimation of the risk and consequences of a cyber incident (Kereopa-Yorke, 2024).

Use of AI in Information Security. Information security usually refers to a set of practices aimed at protecting information and information systems from unauthorized access, use, disclosure, disruption, modification, or destruction (Andress, 2011). The traditional methods of detecting, examining, and solving cyber incidents demand substantial time and effort. In recent years, there has been a notable shift towards the use of AI and LLMs to process and analyse cyber incidents more efficiently (Sufi, 2024). IBM (2023) reports that organizations with extensive use of security AI and automation demonstrated the highest cost savings comparatively, with an average cost of a data breach at USD 3.60 million, which was USD 1.76 million less and a 39.3% difference compared to no use. In addition to financial benefits, it's important to acknowledge that AI supports users through:

- Rapid and accurate threat detection: LLMs can analyse massive datasets to identify anomalies and suspicious patterns, significantly reducing the time and resources needed to detect potential threats (Metta, et al., 2024). For example, AI algorithms can analyse network traffic to detect unusual patterns of behaviour that may indicate a cyberattack (Mughal, 2018);

- Predictive capabilities: By learning from historical data and ongoing threat intelligence, LLMs can predict future attack vectors and vulnerabilities, enabling proactive security measures, owing to supervised learning algorithm. Once trained, the algorithm can be used to identify new instances of malware and classify them accordingly (Mughal, 2018; Fitzgerald, 2023);

- Improved efficiency and productivity: AI can automate tedious tasks like threat analysis and incident response, in this case it can automatically block access to a compromised account or system, preventing further damage and freeing up valuable time for human experts to focus on strategic decision-making and complex investigations (Davis, 2023; Mughal, 2018).

3. Methodology

Purpose of the Study. This study aims to investigate the extent to which LLMs formulate useful information security documentation for an SME with a small number of employees and without IT/security expertise.

Scenario Description. The research was initiated with the choice of 3 programs (ChatGPT, Copilot, Gemini) due to their popularity and ease of use. Then, the following scenario was created:
Accounting office just opened, with 3-5 accounting employees who keep accounting for clients using an ERP both at the company office and at home. The office uses digital certificate/electronic signature for signing accounting statements. The hardware equipment consists of a server and clients (laptops) for each employee, connected via a wireless router.

Prompting Questions. Based on the purpose of the study, the following prompts for inquiry were created:
- **Prompt 1**: Create an informational assets registry in tabular form for a newly opened accounting office with 3-5 accountants who manage client's accounts using an ERP system both at the company headquarters and at home. The office uses digital certificate/electronic signature for signing accounting statements. The hardware is a server and laptops for each employee, connected via a wireless router.
- **Prompt 2**: Create an information security policy for a newly opened accounting office with 3-5 accountants who manage client's accounts using an ERP system both at the company both at the company headquarters

and at home. The office uses digital certificate/electronic signature for signing accounting statements. The hardware is a server and laptops for each employee, connected via a wireless router. Create detailed rules for employees in the Equipment Security section.

- **Prompt 3**: Create a set of necessary information security measures for a newly opened accounting office with 3-5 accountants who manage client's accounts using an ERP system both at the company both at the company headquarters and at home. The office uses digital certificate/electronic signature for signing accounting statements. The hardware is a server and laptops for each employee, connected via a wireless router.

4. Data Collection and Expert Involvement

The LLMs' outputs were documented, without changing the structure, in order to preserve the authenticity of the answers and being digitally saved to facilitate access and viewing.

The responses generated by ChatGPT, Copilot and Gemini were evaluated by experts using a predefined questionnaire in Google Forms, considering their usefulness for accounting manager. The experts are: university teaching staff, compliance experts, cybersecurity agents with 3 to 22 years of experience. A scoring system was established to quantitatively measure the performance of the programs. The rating scale ranged from 1 to 10. To ensure a broad evaluation spectrum, the questionnaire includes open questions on the subject.

Regarding ethical considerations, the confidentiality and anonymity of the answers are respected, and the results were used exclusively for research purposes.

5. Results and discussion

This section presents the results and discussion on the LLMs' performance based on prompt questions on information security documentation, as described in the Methodology section. These results were obtained based on the evaluation criterion of utility.

The data obtained from questionnaire were processed and analyzed to provide a comparative view across these three different programs. For each response, the average score was calculated, allowing for an objective comparison of their performance.

From statistical perspective, the collected data are uniform, with no extreme values recorded. This suggests a common opinion or general perception within each program. The results are summarized in Tabel 1, which shows the average rating for each prompt per LLM program. For instance, Gemini displayed the best average rating, particularly in creating Information Security Policy, suggesting that it could be used as a starting point in the development of useful documents for the company. Similarly, ChatGPT shows good performance in creating information security and policy and Set of Information Security Measures, due to an output that contains all the necessary elements. Regarding the Assets Registry, Copilot generated the best personalizes answer for an accounting office.

Tabel 1: Average Ratings of Prompt Responses

Prompt	ChatGPT	Copilot	Gemini
P1: Assets Registry	6,67	7,00	6,67
P2: Information Security Policy	7,00	6,33	7,33
P3: Set of Information Security Measures	7,00	6,00	7,00
Total (Averaged)	**6,90**	**6,40**	**7,00**

Source: Created by the author

The results of the evaluation of LLMs' performance in the context of information security provide valuable insights into their potential and limitations in this highly complex and evolving field. As demonstrated, the LLMs showed varying capacities in term of utility. It is important to underline that no single program excels uniformly across all criteria.

Based on the responses provided by experts, several important key findings are mentioned. Firstly, the answers are generic and cannot be used as such. Only by adapting to the organization's particular context, the documents are applicable and actionable.

Secondly, acceptable results can be obtained by improving the prompt, through „dialog" and adjustment, or a mix between what the 3 LLMs propose would lead to obtaining more complete documents.

Lastly, the experts have confirmed that LLMs can formulate other documents such as: assessment for risk management, training materials for employees in Information Security issues, e-mails to change passwords to help identify phishing, extracts and summaries from legislative acts, cybersecurity trends.

Conclusion

This study demonstrates that using LLMs for Information Security in Small and Medium-Sized Enterprises is timely for employees. The methodology used, which is based on the creation of a scenario inspired by the reality of SMEs, resulted in the creation of prompts that include cybersecurity issues. The paper presents the capabilities of ChatGPT, Gemini, Copilot in generating implementable solutions, which was evaluated by experts in the field of Information Security. In principle, any type of document can be obtained. It depends on the knowledge of the one formulating the prompts, it is necessary to help the initial output and the ones that follow.

In conclusion, the research's results confirm this approach's efficacy, showing that LLMs can be successfully implemented with some adjustments, to provide recommendations on how SMEs can create information security measures.

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SUSTAINABLE MARKETING AND STRATEGIES: ALIGNING BUSINESS PRACTICES WITH ENVIRONMENTAL RESPONSIBILITY

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ABSTRACT

This paper addresses the significance of companies adopting sustainable marketing strategies and the challenges they face in this transition. The limited availability of natural resources, increasing environmental and social awareness, and changing consumer habits are increasing interest in sustainable marketing strategies among companies. However, various obstacles such as high costs, low consumer awareness, and regulations are encountered. This study provides solutions to help companies overcome these challenges. It emphasizes the importance of strategic planning, research and development efforts, education, green financing, and governmental incentives. In conclusion, the adoption of sustainable marketing strategies is a significant step both environmentally and economically, and this paper offers recommendations to facilitate the transition to these strategies.

Keywords: Sustainability and Sustainable Marketing

1. Introduction

In recent years, the increase in the world population and the change in consumption habits have made the fact that natural resources are limited more evident. This situation has increased the interest of companies in sustainability and accelerated the transition to sustainable marketing and production strategies. However, the balance between sustainability and commercial profit has not always been easy to achieve. In this article, we will discuss the barriers about that .
With the phrase in place, we need to show that "purpose and profit" are indeed aligned. This statement emphasizes that in modern business, sustainability and commercial success are not in conflict with each other, but rather complementary. It is not enough for companies to aim only for commercial profit; they also need to focus on sustainability goals.

Sustainability enables companies to gain competitive advantage in the long term. Sustainable practices encourage the effective and efficient use of resources while minimizing environmental impacts. This not only saves costs but also enhances the reputation of companies that fulfill their environmental and social responsibilities. Therefore, investment in sustainability can positively affect financial performance in the long run.

As a result, it is possible to overcome the barriers that companies face in becoming sustainable and to achieve a balance between commercial profit and sustainability. As Martin Brian points out, demonstrating that purpose and profit are aligned is fundamental to this transformation. By adopting sustainability principles, companies can increase both financial success and social and environmental contribution. (Wood C., (2024). Adtech's approaches to greener marketing)
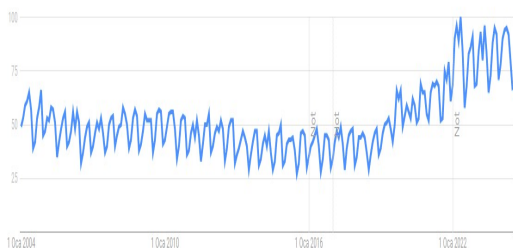
2. Sustainability

The word "sustainability" refers to the ability to maintain or continue something over time. More specifically, sustainability involves integrating environmental, economic, and social dimensions to ensure the preservation and continuity of resources for future generations. This concept aims to minimize the consumption of natural resources while promoting economic growth and maintaining social well-being. In essence, sustainability is the effort to balance the environment, justice, and the economy.

Sustainability holds a significant place in modern business and societal life, being crucial for the preservation of natural resources and the sustainable continuation of economic growth.

Embracing and implementing sustainability principles plays a vital role in enhancing financial success as well as making substantial social and environmental contributions.

Sustainability, with its various definitions, fundamentally involves acknowledging the limitations of non-renewable energy resources and promoting the reduction of their use while encouraging the transition to renewable energy sources. This approach aims to leave a livable environment for future generations and reflects the effort to achieve long-term environmental, economic, and social balance.

Based on Google Trends data, the table shows the temporal changes in search interest for the term "sustainability" from January 1, 2004, to July 7, 2024. This table provides an important tool for understanding the level of societal awareness and interest in the topic of sustainability.

3. Sustainable Marketing

Sustainable marketing is a purposeful practice that works to guide businesses, brands, and society toward a sustainable future. It does so by taking necessary responsibility for its impacts and opportunities, influencing awareness, desire, adoption, and action within economic and sociocultural systems. In doing so, it operates in a manner that serves the long-term well-being of everyone.

Sustainable marketing is not just about the product being sustainable, but also about ensuring that the production process is sustainable. Due to changing consumer habits and the limited availability of natural resources, companies need to adopt sustainable marketing methods. Consumers' loyalty to brands is increasingly influenced by the brands' social, environmental, and economic activities, which have become more important than price. Consequently, brands should implement sustainable marketing strategies.

4. Sustainable Consumption

Sustainable consumption is the way of meeting our current needs without excessively using natural resources and destroying the environment, thus leaving a suitable environment for future generations to meet their needs (Mortensen, 2006: 142). Sustainable consumption encompasses issues related to human needs, equity, quality of life, and consumer health (Mont and Plepys, 2008: 532).

It would be incorrect to consider sustainability solely from the perspective of brands. Consumers must also become aware and consume in a sustainable manner. According to a study by NIQ, approximately 70% of consumers say that sustainability is more important to them now than it was two years ago.

5. Sustainability barriers and solution suggestions of consumer groups

- Evangelicals (19 per cent of the world population)
- Healthy me and the planet (20% of the world's population)
- Minimalists (17 per cent of the world population)
- Idealists (18 per cent of the world population)
- Sceptics (26% of the world population)

Sustainability holds a significant place in modern business and consumer habits. However, different consumer groups face various obstacles regarding sustainability. This study will examine the primary barriers related to the costs and intentions of sustainability, as well as propose some solutions to overcome these challenges.

5.1 Consumer Groups and Their Primary Barriers

Evangelists
- Barrier: The cost of features like sustainable packaging and using sources not tested on animals.
- Solution: Companies should adopt sustainable features such as sustainable packaging and alternatives to animal testing. These practices can raise awareness among consumers and build brand loyalty.
- Health-Conscious and Planet-Friendly Consumers
    - Barrier: Insufficient transparency from brands and retailers.
    - Solution: Companies should be more transparent about their supply chains, production processes, and sustainability goals.

This will enable consumers to make more informed choices and increase trust.

Minimalists
- Barrier: Sustainable products are often more expensive.
- Solution: Brands should offer affordable sustainable product options to appeal to this consumer group. Overcoming the cost barrier can help reach a wider audience.

Idealists
- Barrier: The high cost of sustainable shopping.
- Solution: Companies should develop strategies to reduce the cost of sustainable products and make them more accessible. For instance, bulk production and efficient supply chain management can lower costs.

Skeptics
- Barrier: Lack of trust in sustainability practices, such as in-store refill stations.
- Solution: The widespread implementation of in-store refill stations and clear communication about the benefits of these practices can encourage consumers to embrace such innovations

İn conclusion, sustainability is a complex issue, with various consumer groups facing different barriers. However, overcoming these barriers is possible through adapting sustainability strategies and practices to meet consumer needs. The proposed solutions above outline steps that can be taken to make sustainability more accessible and acceptable. These approaches support both environmental and economic sustainability, enhancing companies' long-term success and societal contributions.

What can be done to overcome the primary barriers of sustainability related to costs and intentions among these groups?

Barriers to Living Sustainably by Consumer Group
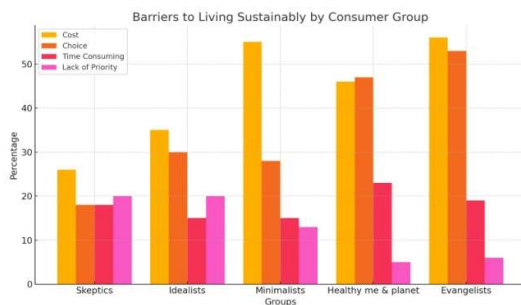
Evangelists: Features such as sustainable packaging or the use of resources that do not involve animal testing.

Health-Conscious and Planet-Friendly Consumers: They want brands and retailers to increase transparency so that they can take more effective actions.

Minimalists: The most important thing when choosing a brand is to ensure affordability first.

Idealists: One of the biggest barriers is the cost of sustainable shopping.

Skeptics: Establishing in-store refill stations could address their concerns.

Classified consumers can be addressed with these solutions using simple examples.

6. The role of government and companies in sustainable marketing

.

The marketing model that both governments and companies should implement is [1]social marketing. For governments, this entails promoting the use of public transportation, reducing carbon emissions, supporting local food producers, and decreasing consumer debt. Governments can also collaborate with local authorities on these initiatives. Companies, on the other hand, should implement the decisions and policies set forth by governments and local authorities.

If we were to conceptualize sustainability as a theater play, governments and local authorities would be the playwrights, companies would be the actors, and consumers, or the public, would be the audience.

One of the major challenges that companies face is the limited number of conscious consumers, where the responsibility primarily lies with the government. According to research, "Education for sustainable development is an important strategy for establishing sustainable development as a guiding principle" and quality education in early childhood allows future generations to live in a more sustainable society (Bulut Y. & Polat O., 2019, Examining the concept of sustainability in early childhood education, 3:9).

[1]Social marketing is defined by Kotler and Andreasen (1996) as follows; "It is working to influence social behaviour not primarily for the benefit of the marketer, but for the benefit of the target audience and society in general.

In addition, another responsibility of companies is digital advertising, which should be conducted in an environmentally friendly manner. Research suggests that a digital advertising campaign generating 1 million impressions has an estimated carbon footprint equivalent to a round-trip flight from Boston to London.

Staraselski stated, "There have been numerous studies recently on the climate impact of digital advertising, and it has been found that visual advertising has a significant impact on CO2 emissions." "Studies indicate that digital advertising campaigns could account for approximately 4% of all emissions. So, this is not

something negligible or to be overlooked."

The 2001 crisis led to fundamental changes in Turkey's banking sector. The establishment of the BRSA and stricter supervision of banks' activities played an significant role in ensuring financial stability. Reforms to ensure fiscal discipline and sustainability of public debt accelerated economic recovery (Öniş & Kutlay, 2020).

As a result, digital advertisements should be made with sustainability in mind.

7. What is the voluntary carbon market?

VCM (Voluntary Carbon Market) provides companies, non-profit organizations, governments, and individuals with the opportunity to buy and sell carbon offset credits.

For example, an airline claiming to be carbon neutral can calculate how much carbon emissions it cannot eliminate. Using VCM, they can then invest in a renewable agriculture project in Brazil to purchase an equivalent amount of carbon offset credits. By doing so, the airline can claim to be carbon neutral. As of 2022, the value of the real voluntary carbon market has reached approximately $2 billion.

When a company intends to launch a digital campaign, we can measure its digital carbon footprint.

This is one of the ways. It is a way to show how positive business results can be achieved by reducing the carbon footprint

8. Conclusion

This study highlights the growing interest in sustainability due to changing consumer habits and increasing social awareness. The integration of sustainable marketing strategies has become a necessity for companies that want to be successful rather than a trend. However, progress towards the adoption of these strategies has been fraught with challenges, including high costs, low consumer awareness, and strict regulations

Despite these obstacles, it is clear that existing companies in industries can achieve success by integrating sustainable marketing. Companies that successfully implement sustainable marketing not only reduce their environmental impact, but also build stronger brand loyalty and increase their reputation to the extent they integrate. The key to overcoming these barriers lies in strategic planning, investment in research and development, and collaboration with governments for supportive policies and incentives.

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GREEN IOT IN AGRICULTURE

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ABSTRACT

Green IoT (Internet of Things) refers to the integration of environmentally friendly practices and technologies in the development and implementation of IoT systems. The main goal of Green IoT is to minimize the environmental impact of IoT devices and networks, both during their production and throughout their lifecycle. This includes reducing energy consumption, minimizing electronic waste, and optimizing resource usage.

The technical aspects of Green IoT involve the integration of IoT devices and sensors with renewable energy systems, energy storage systems, and energy management systems. These systems are connected to the internet, allowing for real-time monitoring, analysis, and control of energy usage.

Green IoT also known as sustainable IoT, it is the marriage of internet of things technology and environmentally friendly practices. It aims to minimize the ecological impact of technology while enhancing resource management and efficiency.

Applications of Green IoT:
Smart Buildings, **Agriculture**, Smart Grids, Smart Cities

1. Introduction

Green IoT in agriculture refers to the use of Internet of Things (IoT) technologies to promote sustainable farming practices that are environmentally friendly and resource-efficient. The aim is to improve agricultural productivity while minimizing the environmental footprint by optimizing the use of water, energy, fertilizers, and other resources.

Key Components of Green IoT in Agriculture:

Precision Farming: IoT devices such as soil moisture sensors, weather stations, and drones are used to collect real-time data on various environmental conditions. This data helps farmers make informed decisions about when and where to irrigate, fertilize, or apply pesticides, thereby reducing resource wastage and environmental impact.

Smart Irrigation: Automated irrigation systems,controlled by IoT sensors, deliver the right amount of water to crops based on soil moisture levels and weather forecasts. This prevents over-irrigation and reduces water consumption, making farming more sustainable.

Energy-Efficient Operations: IoT technologies help optimize the energy usage of farm equipment and facilities. For example, smart lighting and HVAC systems in greenhouses can be adjusted based on real-time data, reducing energy consumption and costs.

Waste Reduction: IoT systems can monitor and optimize the use of fertilizers and pesticides, ensuring they are applied only when needed and in precise amounts. This reduces chemical runoff into the environment and minimizes waste.

2. Benefits of Green IoT in Agriculture

Resource Efficiency: Better management of water, energy, and fertilizers leads to reduced wastage and lower environmental impact.

Increased Yields: Precision farming and real-time monitoring improve crop yields while minimizing the use of harmful chemicals.

Sustainability: By reducing the environmental footprint of farming, Green IoT supports long-term sustainability and helps mitigate the effects of climate change.

Cost Savings: Efficient use of resources and energy can lead to significant cost savings for farmers, making sustainable practices more economically viable.

Improved Food Security: Enhanced productivity and reduced waste contribute to a more stable and reliable food supply.

3. Green iot: a real life project

Automatic Watering and Water Reuse System. An Arduino-based project which involves the use of electronic components (Arduino, sensors, breadboards, relays, etc.)

The system is designed to handle the watering of a plant by measuring the moisture of the soil in every time of the day, also it reuses the water that is being collected to the plate of the plant.

It hydrates the plant in the right moment and with the right amount of water by improving the growth of the plant, also it reuses the water of being

thrown away, but to use it to water the plant again by pumping the water to the initial reservoir.

This project is an example of Green IoT in Agriculture in which it contributes in: Precise Farming, Waste Reduction and Smart Irrigation.
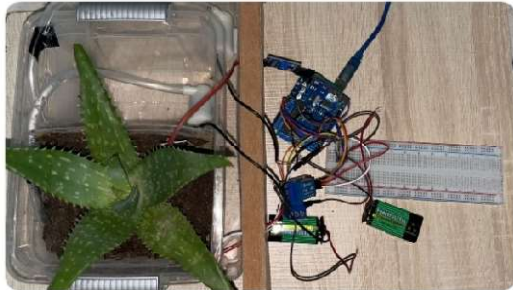

Figure 1: Image of the project

4. How things work?

Key Components of the System: **Arduino Uno, Soil Moisture Sensor, Water Pump, Water Level Sensor, Relay Module.**

The system operates through an **Arduino Uno** which receives signals from a sensor that constantly checks the dryness of the soil.

If the sensor detects that the soil is dry, it sends a signal to the Arduino to activate the water pump. Once the Arduino gets the signal, it turns on the water pump. Water flows from the reservoir to the plant, hydrating the soil.

After watering, any extra water drains into a tray beneath the plant. The water level sensor detects if the water in the tray is too high.
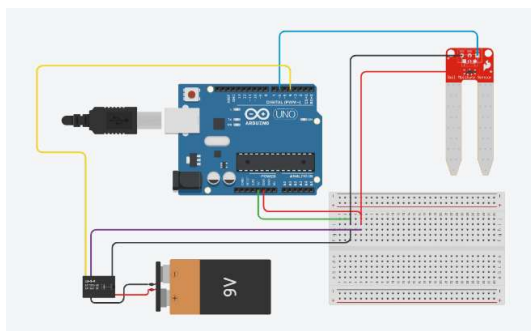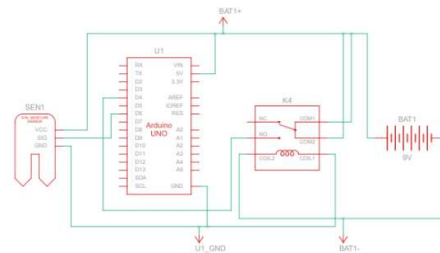

Figure 2: Circuit view

Figure 3: Schematic view

If too much water collects, the sensor signals the Arduino to pump the water back to the main reservoir, saving water and keeping the tray from overflowing.

5. Behind the scenes

Arduino is an open-source electronics platform based on easy-to-use hardware and software. Except for the hardware part it requires a code to operate, Arduino code is written in **C++** with an addition of special methods and functions.

The Arduino Integrated Development Environment (IDE) is the main text editing program used for Arduino programming.

6. The code:

```
void setup() {
  pinMode(3, OUTPUT); // output pin for relay
board, this will send signal to the relay
  pinMode(6, INPUT); // input pin coming from
soil sensor
  pinMode(4, OUTPUT); //output pin for relay
board
  pinMode(5, INPUT); //input pin from water
level sensor
}
void loop() {
  int moistureLevel = digitalRead(6); // reading
the signal coming from the soil sensor
  int waterLevel = digitalRead(5); //reading the
signal coming from the water sensor
  if (moistureLevel == LOW) { // if water level
is low (i.e., soil is dry) then turn on the relay
    digitalWrite(3, HIGH); // high is to turn on
the relay
  } else { // if water level is high (i.e., soil is
wet) then turn off the relay
    digitalWrite(3, LOW); // low is to turn off
the relay
  }
```

```
    if (waterLevel == HIGH) { // if water level on
the plate is high, turn on the relay
      digitalWrite(4, HIGH);
    } else {
      digitalWrite(4, LOW);  // if it is low, turn off
the relay
    }
    delay(400);
  }
```

7. Conclusion

Green IoT is transforming industries by using smart technology to reduce energy consumption and environmental impact. In agriculture, it offers a sustainable solution to resource management, ensuring efficient water use, reducing waste, and promoting eco-friendly practices.

My Project demonstrates how smart systems can automate plant care, recycle water, and optimize water usage, contributing to more sustainable farming and gardening practices.

Future Potential: With further improvements like IoT integration, solar power, and machine learning, this project can be scaled up for larger farms or urban environments, contributing to more efficient and eco-friendly food production.

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DEVELOPMENTAL ANALYSIS OF MACEDONIA

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Abstract

In this paper I will analyse developmental features and future tendencies of SME segment of our economy. Focus on this research will be current state with the SME's, review the effects of COVID-19 on this sector and observation strategies and programmes for future development on this industry. This field of research is important for our country for specific structure of the economy and dominant position of this enterprises. SME's are crucial component of Macedonian economy. Also, they are important for their flexibility and economic transformation.

Our society, especially on medium and long term basis, should be focused on the capacities for development of SME's. SME's should be prepared to anticipate risks and to absorb the changes. SME's are important for labour market and labour force. Policy-makers in the next period should be focused on cost efficiency and productivity of this economic segment. The other aspect of the focus should be export competitiveness of the enterprises and access to financial resources. For the growth of SME's important analysis possesses the capacity of the entire industry for changes and development, which increases the overall potential of the industry, in general.

Key words: SME segment, change and developmental capacities, competitiveness

Introduction

SME industry is important part of the economic system. Small and medium enterprises are flexible organisations as result of number of employment and their simplified organisational structure. Tendency of the strategies and programmes of the policy-makers is to integrate SME's in global supply-chains. SME'S operates as a contractors and subcontractors of corporations. These enterprises are important for economic development of the countries for their ability of technological transfer, knowledge accumulation, know-how. SME'S are crucial for development of transitional economics taking in to considerations their economic structure.

Also for Macedonian economy this economic segment is crucial for the production structure of our country. As result of transition process, dominant component is SME industry. These thesis is founded with the statistical indicator that SME industry participate in value-added with 43%. Also, SME participate with 43% of employment.

Focus of this paper will be analysis of program and strategic setting of the development of SME industry in our economy. Firstly we will start with analysis of National Strategy for SME (2018-2023). In the next iterations I will analyse and the other strategic papers of SME development.

Research hypothesis: Is there developmental framework about SME?

Literature review

Felix and Santos (2018) in him paper taking in to considerations investment in innovations and productivity as a success factors for SME. This conclusion is theoretically expected because productivity, investment and innovations are drivers of growth potential. Rafiki (2019) suggests that networking, training and finances are correlated with firm growth. Network relationship is important for market positioning and development of market potential in general. Training are driving factor for human capital of the company which is driver of innovativeness.

Vescaisiri et all (2007) points the importance of strategic planning for SME growth. Strategic

planning is important for developmental planning in the enterprises which generates structural changes inside the company. Abdilahi et all (2017) shows product and organisational innovations as a factors for generating performances of SMES. Oduyoye et all (2013) analyses the infrastructural support of SME in Ogun State Nigeria, with focus of the significance of the support where as important factor for efficiency points information for local technologies. In this context, important of any infrastructural support system for SME is targeting of the measures and the absorption capacity of the enterprises.

1. Enviarment for SME. Also, the challenge for SME is tax procedures and their optimisation. Positive changes have in labour efficiency, but with critics of minimum wage reform in 2017. This step can stimulate transfer of workers of formal to informal sector.

2. Financial constraints of SME. Kamnar et all (2019) noted that SME in our country are specific factors which constraint their access of finances such as inability of risk management, poor financial statements and inadequate collateral. Government and the other shareholders should focus theirs policies on this segment to minimize these gaps for sustainable growth and development of SME.

3. Strategic framework of SME. Strategic goals of this strategy are predictable business environment, boosting potential for growth of SME and dynamical ecosystem of entrepreneurship and innovativeness. These strategic goals are the pillars of the strategy. Structurally, for realisation of the goals, there are programmes. Intentions of that strategy are service orientation of public administration and increasing the quality of services which offer on SME, better access on financial resources, ecological sustainability of SME and providing supporting mechanisms of international growth of SME.

The strategy is compatible with the international frameworks for SME development. One of these documents is Lisbon agenda (2000) with the focus of knowledge based economy and economic transformation of information society.

Our strategy is coordinated with many strategic frameworks and plans for growth and development. Parallel with this strategy exists Program for economic reforms (2017-2019). The content of the program is middle-term macroeconomic and financial projections and utilisation of the potential in different sectors. Also, important strategic document is Plan for Economic Growth.

This program is founded on three pillars. Components inside the pillars are new workplaces, competitiveness and gazelles. The other strategic program is industrial policy. Industrial policy is oriented on economic complexity (value-added), and sustainability of the sector. Important place in this strategy is SME sector. An important impact of this context, plays innovativeness program and export strategy. Connected with the SME export is one of the factors with generic potential and multiplicative effects of internal growth of the companies.

Institutional support strategic plan of the APPRM

In the last strategic plan of the Agency are integrated goals such as standardisation of SME, Awareness for financial instrument etc. This framework indicates that in our country is defined developmental trajectory of SME. Crucial for the effects are realisation of these measures and activities which are founded on financial construction.

4. Practices of the supporting of SME. In 2018 is founded First centre of innovations and development of SME in one of the Macedonian business chambers. Though this centre, SME industry should have better access of EU Founds. EU founds can be supporting instrument of feasible projects of SME.

For better performance of this centre, it should be more transparent and to have capacity for providing services on enterprises taking in to consideration their heterogeneity.

Good centre for SME have in Southeast planning region with the goods analysis and studies as a start point of the capacity and potential of the centre and the region as a investment opportunities in general.

Gaps of cooperation of SME and Multinational companies

For integration of SME in global value chains in multinational companies' important factor is bridging the technological gaps between SME and multinational companies. That goal can be achieved by better capacities of R&D in SME. (Finance Think, CUP)

Impact of the Covid on SME . Covid 19 crises affected SME industry. In this context, one research publications points that 82 % of surveyed enterprises are affected of Covid. Consistently, government measures and strategies should provide reliability of shocks and capacity for anticipation. Crucial for this are more trainings for crises management and creating awareness for importance of changes management and structurally development of adaptable specific models for management of changes.

Activities of Agency for supporting entrepreneurship of Republic of North Macedonia

1. Training for Women entrepreneurship
2. Training for Social entrepreneurship

3. Competitiveness development training
4. Business plan training
5. Local consultants

Source APPRM

Good practice of the reporting of APPRM is the measuring the satisfaction of trainings. Data and graphs of the report indicate high level of satisfaction.

In this program should be included trainings and more activities for development of rural and agricultural entrepreneurship for diversification of ecosystem and supporting agricultural and rural development.

Importance of standardisation on SME competitiveness, innovation and performances

One of the important factors for strategic competitiveness of SME is standardization. Standardisation contributes to generate efficiency of the business processes and increasing the level of targets and productivity. Standards in SME create opportunity to increase their capacity for growth and development.

Knut et al (2011) in him paper noted that standardisation generate economic growth which create knowledge. In that context, important is knowledge as a creator of inventions and innovations.

Rodriguz et al (2006) notes positive implications of standards on firm performances. Standards create better opportunity as a instrument for goal achievement.

AI as important factor for enhancing SME Potential Artificial intelligence in macro level creates TFP (Total Factor Productivity). On micro level stimulate efficiency and create capacity for realisation in enterprises.

Limitations and Recommendations

A limitation of Development of SME is basis of transition and transformation processes of our country. In this context, Key role of transformation should lead SME.

In general in economy basic question is efficiency. Key point of economic policy, specifically policy for supporting SME is efficiency and effectiveness. Firstly, we should define macroeconomic framework for SME development. Second we should define fiscal implications of these measures. Important factor is political stability and social context because one component which imply of SME investment is uncertainty. Credit support and monetary policy is also important factor for SME growth and development.

Inside on microeconomic side we should improve capacity for adaptation, change management, performance measurement for better competitiveness.

Motivation of employment as a key role of productivity of SME

Motivation of employment is one of the factors which creates productivity in SME.

SME competitiveness model.
Source: Firm Level Competitiveness of Small and Medium Enterprises (SMEs): Analytical Framework Based on Pillars of Competitiveness Model

Conclusion

For better SME competitiveness we must create better business context. We should create political and economic stability. This component is important about risk premium and animal spirits of managers and owners. Also we should improuv technological capacities of our SME sector for better link with FDI in our country.

This coherent model should generate transformation capacity of SME segment and economy in general.

Research hypothesis is in general accepted but we haven't continuity in the SME development planning.

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