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CENTER FOR PROFESSIONAL EDUCATION "KNOWLEDGE AND BUSINESS"

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Sincerely: Prof. Dr. Sc. Petko Iliev

The Tarnovo Constitution – an expression of National Tradition and European experience

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Abstract. On the eve of the 145 anniversary of the Tarnovo Constitution, the research focus of this paper is presenting and arguing to what extent the First Bulgarian Constitution- determines the manner of governance of the newly liberated state. The main themes addressed in this article are the streams and attitudes of the population of Bulgaria at that time and referring before the liberation, to what extent the historical attitudes enabled the creation of the Political elite. For the needs of the research process are outlined historical documents and books on this topic, which helped for the analysis on the existence of a balance in the First Bulgarian Constitution. The research findings outline to what extent the moving social groups in the society were prepared to be ruled under so Liberal Constitution; they also find how the balance of power was achieved through the elaboration of the Constitution and its numerous changes. The review of the elaboration process of the Constitution before and after the liberation of Bulgaria and its research findings are bringing us to realities which can as well be projected towards the modern times legal process. Thus, the establishment of the Tarnovo Constitution confirms its complex creation process which requires overall efforts in reviewing national tradition and the impact of the Great powers. The latter inevitable was/is a discussible question which stretches in the historical period of Bulgarian history and gives practical implications for scholars in humanities.

Key words: Bulgarian First Constitution, Tarnovo Constitution, European experience, Balance of power.
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1. Introduction

The First Bulgarian Constitution – the Tarnovo Constitution of 1879, is a crucial document to Bulgarian History, because it determines the way the newly liberated state would be governed. In the following work will be presented the streams and attitudes of the population of Bulgaria at that time and the creation of Political elite in the period before the liberation and afterwards. The impactful role of Russia in this process was important but there were native foundations, which had gained ground on these lands long before the liberation Russo-Turkish War of 1877-1878. The Tarnovo Constitution laid the foundations of the democratic society in Bulgaria immediately after the Liberation, conveying the spirit of liberalism through the Belgian Constitution of 1831 and the influence of the Serbian and Romanian constitutions. The Constitution, having taken into consideration the middle-bourgeoisie type of society, tried to establish the fundamentals of people's rule and the division of power. We should not forget that through people's rule, the Interim Authorities introduced administrative division of Bulgaria into districts – regions and counties and vested the people with the power to govern.

2. The First Constituent National Assembly in 1879 – composition and organisational process

Both the San Stephano and the Berlin Treaty ruled in 1878 that the Constitution – the Organic Statute should be drawn up by an assembly of Bulgarian notables". "Notables" means prominent citizens, i.e. citizens distinguished from the people's mass by the fact that they occupy high public office, have substantial wealth and

education and are highly respected. The official Russian documents call them "renowned people". Since at this point in Bulgaria there was no aristocracy, the notables could be determined from among the overall population through individual indications (elections).

The Constituent Assembly was convened in Tarnovo on 10 November 1879 by the Emperor's commissioner Knyaz Dondukov. It set the beginnings of parliamentary life in liberated Bulgaria. Knyaz Dondukov asked S.I. Lukyanov, Head of the New Department of Justice, to prepare a draft for the forthcoming Assembly and the Draft was sent to St. Petersburg for approval. The Draft vested great power in the Prince and made the Assembly an advisory body rather than a Parliament in the Western European sense of the word. In St. Petersburg it was decided that the Draft Statute must be made more liberal and that great power must be given to the National Assembly. The amendments made in St. Petersburg were all in the liberal spirit. Thus, the Prince did not have so much power as it had been provided in Dondukov's initial draft, but the Russians preferred to rely on the people, since they could see their support, rather than assign any hopes on the future Prince, who, most likely, would have been a German Prince. Marko Balabanov, a prominent Russian official, expressed the opinion that the liberal amendments made by St. Petersburg were probably due to the Liberalism that had been spreading across Russia at the time, which would eventually help building a more democratic society.

The Grand National Assembly opened in Tarnovo under the chairmanship of the former Exarch Antim. It was composed of 231 members, who may be divided into 3 categories:

1. 89 representatives of the People, elected on the basis of one deputy for each 10,000 of the population.
2. Notables- the so-called members by right – 118 in all, the Bulgarian Exarch and his Bishops, the Greek Metropolitan of Varna, the Turkish Mufti, The Jewish Rabbi: about 13 clerics, 2 members of the court of cassation – representatives of the Courts and of the Regional and City Councils.
3. 21 People, nominated by Knyaz Dondukov as "Tsar's Commissioners": 11 Representatives of the Turkish Minority, one representative of the Rila Mountain and the Bulgarian organisations in Odessa and Vienna as well Petko Slaveikov and Dr. Mollov- eminent Bulgarians (8 of them).

It is worth noting, that to have Members of Parliament elected by the people - universal suffrage, was an idea and decision of Knyaz Dondukov, although that was not particularly welcomed by the diplomatic circles. An interesting explanation for that decision is that through this manoeuvre he wanted to gain people's appreciation and ensure for himself the opportunity to be elected Prince or, else, through the protests that could arise over the debates in the Parliament against the Berlin Treaty to create difficulties to the Great Powers.

According to the preliminary experience of the deputies, they fall into two groups. The first comprises those who had played a major role in the national affairs or in the liberation struggle. Some of them had acquired education in Russia, Western Europe or Constantinople. It could be argued that they lacked political experience, yet they had accumulated experience from the affairs they had been in charge of. Another group from the Constituent National Assembly had spent their lives abroad like Prof. Marin Drinov; they had obtained scientific degrees in Western Europe and they had never played any roles before the Liberation, yet they occupied important positions due to their education. Although some of the members were elected and others were appointed ex officio, it had become clear that this was a homogenous body and each member of it considered the interests of the country.

When voting the Regulations of the Organic Statute and the election of board – chairmen there were heated debates and the freedom of speech was really something exceptional, which was ardently used after the long time of Turkish Yoke. And, nevertheless, the Russian authorities wanted to have only discussions over the Draft Organic Statute, there were disputes held on various issues – freedom of press and meetings, the merits of a Senate. The Members of Parliament had inviolable rights and the freedom of speech was guaranteed. Generally, there were open sessions, still they could be closed by decision of the deputies. There was also a requirement for a quorum – majority of the Members of Parliament. Voting took place through rising in consent for accepting one proposition or another, though ballot-paper and roll-call voting were also provided. The Regulations had also a requirement for regular attendance at all the sessions. During the sessions there were foreigners as well – representatives of Austria-Hungary, Great Britain, France and Italy. Initially, the German representative – Brunning wanted to establish a commission within the Members of Parliament, who should react in case of direct Russian influence, but the others did not agree stating that they should all act in an "absolutely neutral" way. Their main goal, however, was to see how the Assembly tackled its task. One of the first and perhaps most important issues, which the deputies started discussing, was the question of the "integrated unity of Bulgaria". This issue was raised at the Parliament's podium by M. Balabanov, and the debate was quick to ensue irrespectively whether the speakers were 'chorbadzhii' or common people, former or current

revolutionaries. Still, before the very opening of the Parliament, the issue of unified Bulgaria had been discussed in Plovdiv.

It could be noted that the differences on the All-National Question were not grounded on political principles. The historical analysis has established that after those debates and protests against the provisions of the Berlin Treaty, some diplomats started to work for the dissolution of the Constituent Assembly and the formation of a new one comprised only by representatives - "notables".

3. The establishment of the first Political Parties

Right from the beginning, the Division of Bulgarian opinion between the "Old" and the "Young'' was demonstrated. The "Old Party " represented the big bourgeoisie- 'the chorbadzhii', usurers and merchants and they had the support of the clergy. The "Young Party", which later became "the Liberal or Radical "was a homogeneous group. "Even before the liberation it had contained various tendencies, though the left wing democrats had kept the upper hand". After the April uprising in which most of the Revolutionaries-Democrats had died, the Leadership of the Party passed to those middle bourgeois, who believed that the liberation would come about through Russian intervention and not through revolution" (Black, 1996, p. 314). The Bulgarian population did not have very rich representatives in this early period before and after the Liberation and society was comprised by middle class representatives. The distinctions between the moderate and radical parties or "Old" and "Young" were evident in the National Assembly in choosing the procedure for the discussions on the Draft Statute. The moderates wanted to delegate the power to the patriotic and educated elite, to those who have experience. A commission of 15 members was thus created, which had to elaborate a report on the Draft Statute and the principles, which would be most appropriate as a basis for the Bulgarian constitution.

The commission was appointed with the task to explore the Russian draft project and report on that. The report represented political wisdom, but on the other hand, there was an air of conservatism about it – "this committee revised the draft, making it less democratic than before." (Fox, 2008, p. 226) So, the idea of a Senate came up, which was to replace the State Council due the shortage of "worthy people" who could join it. The senators were to be appointed by the Prince. Property qualification and universal suffrage were also introduced for those citizens, who paid an annual tax of 100 pieces.

The commission's report was read in the Parliament on 21 March, 1879 recommending the Russian document, nevertheless, with some differences. The first part of the report provided grounds for the basic constitutional principles, while the second – specific propositions for supplements to the draft Statute. The principles of the constitution defined by the commission were: freedom, equality before the law, self-determination and security of property and in their view those were comprised in the Draft Organic Statute. It is worth noting that the commission stated that the national representatives should be fully elected. After the report had been presented it was subjected to the criticism of the "Young"- the Radicals, who had the majority in the Parliament. Hence, no-confidence to the commission was voted. However, I would like to make a note here for a particular matter I have found in historical references. Quite often, when defining the liberals it is said that they are a group of common people – representatives of the "revolutionary proletariat" (Black, 1996, p. 86), yet this is quite away from the truth. The radicals were trained professionals with such a person among them as Petko Karavelov, who studied in Greek schools, and later on he continued his education in Moscow. After the commission's report had been rejected by the Constituent Assembly, each of its articles was reviewed and discussed separately by all the MPs.

The formation of the Constitutional Assembly by the Russian authorities and the election of its deputies are just another step in establishing a distinctive face for the government of New Bulgaria. The profoundness of the discussions and their grounds, sometimes deviating from the main objective, namely, the elaboration and adoption of Organic Statute, is indicative for the freedom of speech enjoyed by MPs. Though trying to form allies on a wide scale, the Russian influence was soon reduced due to the strong resistance by one of the two parties that had started to distinguish itself – the party of the "Young"- the Radicals. With the complete rejection of the commission's report the national representatives had shown that the Assembly had the potential for discussions and they took the Russian proposal for an Organic Statute as a "draft programme", just as Knyaz Dondukov had defined it at the Assembly's opening. The patriotism and the concern for the lost lands and compatriots by the Berlin Treaty' decision could be seen in the very first discussions of the national representatives. Russia's tentative manoeuvres for gaining influence were evident in the struggle between the two parties – the "Young" and the "Old". That was a struggle that would be much more evident in the course of creating the future constitution of the Principality of Bulgaria.

4. The Tarnovo Constitution – The Democratic and Liberal Choice of the New State

Generally, the word constitution (from the Latin 'constitucio' – establishment) means fundamental law. It defines the principles of the government organisation, the main government bodies and their authority, the basic rights and obligations of the citizens. All the other legislation is formed upon its fundament. The constitution has a key role for the overall social and political development of a nation. As it has been already mentioned above concerning drawing up the Organic Statute according to article 4 of the Berlin Treaty, a Constituent Assembly was convened in February, 1879. I think it would be appropriate to mention in the very beginning why the word constitution is being used and not organic statute. As we know the Organic Statute – "Organic octroi" has a lower rank compared to "Constitution" in respect to government organisation. There were organic statutes at that time in countries without full sovereignty due to their vassal position in respect to another country. Both under the San Stephano and the Berlin Treaty, the Principality of Bulgaria was to become vassal to the Sublime Porte. Yet, the established position of Bulgaria in international legal aspect was inadmissible for the Tarnovo founding members and therefore it was proposed and unanimously adopted that the title "Organic Statute for government organisation of the Bulgarian Principality" should be replaced by "Constitution of the Bulgarian Principality''.

Having been led by the same considerations, the deputies voted for the dismissal of the article 3 fragment from the draft – "in vassal relations to the Sublime Porte". Those textual modifications however did not denounce the international agreements concerning the country's statute.

- **National Traditions and the Role of the foreign Experience Constitutional Law**

The Constitution of Bulgaria was adopted on 16 April 1879. It had a content of 22 chapters and 169 articles. The master prototype serving as a model in drawing up the Tarnovo Constitution was the constitution of the Kingdom of Belgium of 7 November 1831. Along with the Russian legal texts the Russian authors of the Organic Statute had also used the Serbian and Romanian Constitutions. Many of its regulations related to the fundamental rights of the citizens as well as to the form of government organisation were directly or indirectly borrowed from other constitutional texts – Romanian. Serbian, Greek. We can find the principle of sovereignty of the people set in the basis of the Belgian constitution, perhaps under the influence of Jean Jacques Rousseau's theory of the "Social Contract", which was applied also in the Tarnovo Constitution. Under this principle, power in the democratic state issues from the people for the people - "Pour le Peuple et par le Peuple". So, art. 57 states – "All Bulgarian subjects are equal before the law. There may not be any class division", and it conveys the idea of people's power and equal political rights. The first Bulgarian constitution unconditionally recognized the merits and dignity of the individual and his or her right of freedom.

- **The legislative separation of the Power**

Yet, one of the main principles on which the Tarnovo Constitution was based on the division of the powers as a basic democratic constitutional principle. One of the most important principles set in the Tarnovo Constitution was that of the separation of power among three branches – executive, legislative, and judiciary. It relates to citizens' natural freedom and rights.

The Constitution had a strong impact with its provisions about the citizens of the Bulgarian Kingdom, respectively about their rights, liberties and obligations. For the first time in Bulgarian history the universal individual liberties were proclaimed in legislation, as it was used also in Preamble of the Constitution the foremost principle of the Constitution is the principle of freedom – equality, rejection of the class division of the society, non-admission of any titles of nobility or other distinctions that would create alienation within the citizens in the society; The Constitution clearly distinguished the rights of the Bulgarian citizens and the foreigners. At that time, Bulgarians were the majority of the population but they didn't enjoy special Constitutional status and were equal to other minorities under the Rule of Law within the unitary nation state of Bulgaria. The political rights established in it could be enjoyed only by the citizens of the Bulgarian kingdom, and the civil rights therein were valid for everyone living in the country. Among the civil rights were the individual rights and liberties – there was a ban over purchase and sale of human beings; freedom for each and every slave, who stepped on Bulgarian territory; punishments had to be based only on effected sentences by regular courts.

The liberal ideas in the economic field found their expression in article 67 – whereby "property rights are inviolable". It would provide the constitutional basis for the establishment of Bulgarian law.

● The King's power according to the Constitution

According to the Constitution the King had a real and important position within the state. He was the head of the state and its supreme representative, Commander-in-chief of the Army and the Navy and he was also vested with the supreme executive power. Besides, he also had legislative power – the bills and the government propositions were presented by the respective Minister by order of the Tsar. The acts that were passed were promulgated by him. If they were not ratified, they could not come into force and the Constitution did not provide a mechanism to solve the contradictions between the King and the National Assembly. The King also had influence on the judiciary – he appointed the staff in the judiciary and had pardoning power. Besides, he also had the right of amnesty just as the National Assembly.

Furthermore, as the Head of State, the Tsar is representative in international relations. What is interesting here is that he had no political or criminal liability. "The person of the King is sacred and immune" (chapter 8). In respect to the National Assembly, the Tsar had the obligation to convene the Parliament, either by himself or through an authorised person. The national representatives took an oath, where along with the other text, it was said that they should have "before their eyes solely the common good of the people and the King". The Tsar delivered a speech from the throne when displaying his projects and propositions, which were to be presented in the national Assembly for discussion. He could prolong the Parliament but not longer than 2 months, and could dissolve Parliament and set the date for new Parliamentary elections. The Parliament could not meet for its sessions unless it was convened by the King, including upon postponing or closing of a session or dissolution of the National Assembly. As a presenter of the Executive Power, the king appointed and dismissed Ministers. As we can see from the presented competences of the Knyaz/Tsar, they turned him a figure of primary importance in the kingdom, they had also created some mechanisms for restrictions, which the first Bulgarian Prince - Alexander Batenberg would try to change later through his diplomatic relations via Russia.

● The relations between the King and the Parliament

The King was restricted by his competences vested in him by the Constitution. He took an oath at the enthronement to observe the regulations of the Constitution. The prestige of the King's power was boosted through the annual convening of the Parliament in sessions. In reply to "the speech from the throne" the National Assembly presented an address to the Tsar, whereby stating their opinion on the issues raised by the Tsar, who was also involved in that in his turn. The budget was adopted by the national Assembly, but it was subject to approval by the Tsar. International agreements were concluded by the King, yet in some cases they were approved by the National Assembly. (art.17(2)) When there might be any danger of internal or external threat and it was impossible to call the Parliament, the Tsar could issue an act and order, which would have the effect of law. Those were subject to subsequent approval by the National Assembly. However, those prerogatives did not concern taxes and state receivables, which always required the consent of the King.

The King had no right to give his opinion on the constitutional nature of the laws passed by the National Assembly. That was an exclusive right of the Parliament. As it has been mentioned, the Constituent Assembly determined the statute of the Regents, who could be summoned and approved only by the Bulgarian National Assembly. Quite naturally, it has to be specified that regents were summoned only when the heir to the throne was an infant. Irrespective of the fact that the legislative function was shared between the National Assembly and the Tsar, and laws were subject to sanctioning, legislature had remained the main function of the National Assembly. Only the Parliament could interpret laws and give opinion on their constitutional nature. Along with that, it could amend the bills and propositions. Regarding the judiciary, Chapter 13 states that it is a prerogative of "the judicial places and persons acting on behalf of the Tsar". The formulation itself makes it evident how the judiciary was related to the executive through the King /Prince, where it does not mention anything like completely independent power. It can be further added that the judges were appointed by the King after they had been nominated by the Minister of Justice, who was subordinate to the King. Judiciary staff was made permanent in 1899.

Chapter XX of the Constitution was dedicated to the Grand National Assembly. As we know, there was no Upper House but the Grand National Assembly was invoked in special cases. As a composition, it was as the ordinary National Assembly, and its members were elected in the same way. But the number of members of the Grand National Assembly was twice as big– every electoral Unit of 20000 inhabitants sending two deputies instead of one. As the Constitution says – the Grand National Assembly could decide only those matters, which had necessitated its convocation. The King could call the Assembly to decide questions of exchanging or ceding a portion of the territory of Bulgaria; for issues, which decision requires revision of the Constitution; to elect a

new Prince, when the reigning family becomes extinct, owing to the absence of descendants, who can occupy the throne.

As we mentioned the right to revise the Constitution belonged to the institution of the Grand National Assembly, but the right to provide this, to the deputies and the King. In order that the latter could happen, the decision should have been approved by 2/3 of all the members of the Grand National assembly. Thus, this made it quite difficult for the personality of the First Bulgarian Prince – Alexander I Batenberg, who in the Parliament faced the Radical party of "the Youngs".

The Tarnovo Constitution proclaimed Orthodox Christianity the official religion, which had to be professed by everyone, except for the first Prince. At the end, the Constituent Assembly came up with a nomination for the Bulgarian throne by proposing the 22 year old German Prince Alexander Batenberg, who had fought with the Russian army in 1877-1879. The Prince was elected after the closing of the Constituent Assembly and during the Grand National Assembly convened by force of articles 85 and 144 and pursuant to article 3 of the Berlin Treaty. The Prince was elected on 17 April 1879. As article 3 of the Berlin Treaty stated, the Prince could not be a member of any of the reigning dynasties. Batenberg proved to be agreeable also for the Great Powers as his most substantial biographer, A.G. Drandar (Drandar, 1884), pointed out. However, history showed that once he found himself on that difficult post, Batenberg became a buffer between Austria-Hungary and Russia and the rivalry continued. Upon assuming the rule over Bulgaria, he started to look for harmonization with the conservatives and he formed the first government from among their circles. This government failed to win the trust of a very liberal National Assembly elected in 1879. Over the following years, Alexander Batenberg was an advocate of a change in the Constitution and the constitutional form of government. Batenberg confronted the constitutional framework – democratic for the Bulgarian people, produced as a result of liberalism in the Constituent Assembly. Therefore, he asked several times the Russian Emperor Alexander II for a change in the Constitution, whereby he could modify it at his own discretion. As it has been mentioned, under article 141, part. 2 a change of the Constitution would require convening a Grand National Assembly.

As it has been repeatedly pointed out, the Tarnovo Constitution had the task to provide the general direction in defining the public authorities, yet it did not cover exhaustively the whole public and political life. Due to its democratic formulations it was in contradiction with the objective social and political realities. Hence, its amendment took place in 1893 under the regime of the delegated authority. Those amendments were related to the King's statute and his authority in respect to the absolute consolidation of his power. Under the pressure of the political forces, that regime was abolished and the Constitution was restored. The first amendment was made in 1893 by Stephan Stambolov's cabinet, and it was related to the establishment and strengthening of the Bulgarian dynasty. The second one dates back to 1911, when article 17 was revised for the conclusion of the international agreements with all the countries that had been approved by the Tsar as well as for his four-year term of office. As a result of this, in addition the limited government in the form of Constitutional Parliamentary Monarchy, after several Constitutional amendments, strengthening the powers of King took the shape more along the lines of a dualist Constitutional Monarchy.

5. Conclusions

In the introductory section the question has been asked whether the population had been prepared to govern and the conclusions lie in the dichotomy 'Yes and No'. One of my starting questions was to research to what extent was the people of Bulgaria prepared to receive and to be ruled under so Liberal Constitution and as well to see who are the moving social groups of the society at that time. The lack of traditional political experience, however, could not prevent the people from trying to do that according to their potential. Providing a direct answer to the topical issue, whether there was a balance of power in line with the Constitution, again there can hardly be a positive answer here, since nevertheless it was well balanced, its application proved to be an opportunity for political intrigue. Interest is provoked undisputedly by its liberal nature under the standards at the time – the rejection of the Upper Houses and the introduction of universal suffrage is again opposed to the so-called "political elites" (represented by the conservatives – "the Old') in favour of the middle-class interests. As J.S Stavrianos says we have: "a people, who were generally suspicious of all foreigners and resolved to govern themselves; popular party, which adopted ultraliberal Constitution and was determined to enforce it; a likable but inexperienced and tactless prince, who knew little of his adopted country; and a great power with supervisory authority but with no clearly defined and generally accepted policy" (Stavrianos, 2000, p. 428). Therefore, the Tarnovo Constitution became an expression of the strive of an egalitarian society that had lived for many years

under foreign rule as well as an instrument for permanent struggle for ruling power and domination on the part of the chief head of government – the Prince.

As well going through the process of elaboration of the Constitution, it was very interesting to note why the Power was separated like this and to what extent the Role of the Great Powers, the Russian Influence and the personality of Alexander Batenberg helped for the numerous conflicts in full implementation of the Constitution. The Constitution was amended twice on 15.5.1893 and 11.7.1911 and it was suspended twice at the time of the Full Powers Regime (1 July 1881- 6 September 1883) and the May 19 Regime 1934. One of the crucial changes was of article 17, which says that the Presenter of the State in all its collaborations with other countries is the King. On behalf of the King – The Government can make negotiations and contracts with other countries, which are approved by him, but the contract should be announced to the National Assembly if they are frightening the interests of the country. This gave the king full power and started the movement of secret diplomacy from 1911. In the original text it is written that they should be signed just between the neighbouring countries.

In addition, no matter the Egalitarianism and nationalism of the Bulgarian society, at the beginning of the liberated country, a Constitution was created, quite democratic. The leaders of the Country between Conservatives and Liberals later and Radicals had not tried to go very well beyond the interests of the Great Powers and Russia and to put away the personal ambition of the King (Prince). Nevertheless, it was a product of its time and was to some extent applied in the middle-class society at the beginning of the nineteenth century.

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Alternative spaces for youth culture vs historical heritage. Youth activism for common good

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Abstract. The research article is exploring through a comparative analysis young people's form of participation in cultural space. The framework of the research is in the context of the city of Varna, Bulgaria. The methodology of the research includes desk research, interviews and a comparative analysis. Its main scope is to differentiate the sense of belonging through elaboration of young people's diverse activities of participation. The concept of turning space into place is arguing how young people can reclaim through cultural activities a sense of belonging. The review of the diverse forms of youth participation in modern forms of culture and expression provides novelty concepts on the role of youth people in preserving cultural heritage. Moreover, the research findings are providing practical implications on better inclusiveness of the youth cultural spaces into the belonging to the site specific communities – neighborhood/area.

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1. Introduction

In a city where many aspects of our life are shaped by economic interests and forces , the culture nevertheless can play a vital role in fostering collective participation. Moreover, youth people through forms of culture and inclusion can reclaim a sense of belonging in shaping cities, neighborhoods and surroundings. The latter is essential in shaping culture and art policies and to overcome elitization of it towards young people. In contrast to the easy access to the mass culture by young people especially from marginalized communities, the practices towards social change require active participation and give perspectives for the involved groups of recreation, networking and engagement in societies. Considering that in a city the key role of culture is in shaping societies and social change practices in its broad term is a starting hypothesis of this research. Throughout its forms citizens are being involved not just as participants but as re-creators of processes and events and re-established strong ties within networks and communities and enriching the commons.

2. Implementation

The research brings the theme of youth culture practices and places in choosing three site specific alternative places and initiatives. "ReBonkers" is placed in a former historical settlement from Ottoman times turned into an alternative cultural center. "HALE 3" is a re-created center for alternative cultural practices, non-formal education and skateboard activities, which is located in the former Poligrafiya building. The "Emergence" art fest was organized by an informal group of youth whose passion is the re-development of art practices within the city of Varna, Bulgaria. All of these initiatives and places either created within the past years or recently are redistributing private resources and using fundraising, re-shaping civic society energy and using the potential of the new technologies for reaching people for the co-creation process. Following a framework (Wisniewska, 2015) in a prescriptive sequence the study is diversifying culture with people as action and commons, as inclusion and a social glue. Three case studies provide practices that give glimpses of proactive behavior in setting a scene for co-creation and re-development of public places, in providing space for alternative forms of culture for/by youth people, which suggest resilient ways of cultural practices with people.

Culture as action and commons

Daily we use the word culture so often not just for referring to Art, but it is becoming a language for describing reality, for exploring historical heritage and neighborhood surroundings. For most of the countries in transition in Southeast Europe after the 90s culture and art entered public space not just as a decoration , but as a commentary and reflection and through this opened a dialogue about that space in a historical perspective. "ReBonkers" is a newly established place for alternative culture in Varna, which was open to the public 2 years ago. The space is distinguished by unusual architecture and acoustics – a tunnel-like round stone building with a natural green roof.

Figure 1. *Outside facade and main entrance of '"ReBonkers" (2023)*
Source: Own photo

In the 90s, the Bonkers club, which was among the first scenes for alternative music in Bulgaria, was housed there. Key to the development of bands such as Rag Dolls, Babyface Clan, Pyromania, Big Mama Scandal, Slang, etc. At the beginning of the millennium, the "bunker" fell into disrepair and turned into an overgrown abode of homeless people. The transformation of "ReBonkers" from a historical place to a space for culture started in 2016 and was adhered by collective and organized efforts of the NGOs - "Varna Youth Capital 2017'' and "Talyana'' association, which is engaged for its refinement since 2017.

Figure 2. *"ReBonkers" Indoor eastern side (2023)*
Source: Own photo

Through innovation and art, the association "Talyana" helps preserve the architectural heritage of the city and meets the public with new and different forms of cultural practices. Enormous amounts of work and commitment have been done by the organizations throughout the journey of carefully protecting the tangible heritage and the collective transformation into place, which was based on new embodied knowledge. Throughout the numerous reviewed interviews of the members of the organizations in local newspapers and media (Barbov, 2022) it is evident that the challenge process of restoring the place which is highlighted requires participatory tools and models of governance. Abide this participation entails a number of paradoxes when applying academic knowledge that need to be carefully considered through the prism of the commons.

Participation is not just an act but, in the process, also matters the reciprocity of the action in the local context. In that case among the learning lessons for the organizations involved are that the collective

intelligence enables the community to create some kind of togetherness, to be flexible and a sense of belonging when dealing with institutions.

The stage for contemporary art in Varna – the "ReBonkers" space, opened its doors less than 2 years ago, but in its short experience it has already held more than 100 events with the participation of 342 artists from Varna, Bulgaria and the world. During my exploratory site tour, I saw the latest exhibition "Postcards and contraband" by Nikola Stoyanov and Aaron Roth, curated by Hristo Kaloyanov. The exhibition is the result of a study of the official archive of the "Combating Drugs Trafficking" Directorate of the "Customs" Agency in the period 1975 – 1985.

Figure 3. "ReBonkers" main entrance indoor - on the left side - poster of the exhibition "Postcards and contraband" (2023)
Source: Own photo

It shows official notes, photographs, negatives, references and report notes. which mark part of the routine of the customs case, but also the diplomatic image that the services must maintain before the international community, explains the curator Hristo Kaloyanov. "ReBonkers" program of activities is multidisciplinary and includes contemporary theatre and dance, film, experimental music, literature and discussion of social issues, but a major focus is on contemporary visual art.

Figure 4. "ReBonkers" Exhibition "Postcards and contraband", installation (2023)
Source: Own photo

This year the building of ''ReBonkers'' turns 200 years -old and is actually the oldest fully preserved building in the summer capital of Bulgaria- Varna. Back in 1823, the stone building was built by the Ottoman authorities as a storehouse for gunpowder. Many call it the bunker. During the Crimean war (1853 - 1856) when Varna was the most important city of the western coast of the Black sea, and turned into an important strategic center of the military operations the bunker was used as "gunpowder burial''. Close to "ReBonkers" still now can be found remains of the fortification from the Ottoman times of Varna called "Kadar Baba tabia''.

Figure 5. Remnants of the former Varna fortress of Kadar Baba Tabia. - Regional Library "Pencho Slaveikov'', Varna, Bulgaria - CC0. (no date).
Source: https://www.europeana.eu/item/2058609/object_PSRL_5412476?lang=en.

Referring to past and present for some reasons in school is usually being taught in glorious events about world history, while little space is left for our community, our neighborhood. Moreover, our community belonging knowledge is predominantly narrated through heroic struggles. "ReBonkers'' turned a historical place into a space for alternative cultural events through systematic work with institutions in the municipality of Varna and Bulgaria. Being situated in a very mixed and central neighborhood with a long history is a great advantage for its coexistence. However, in order for its full potential and position in the neighborhood and the involvement of the community to be more intensive it needs more collaborative actions. This could as well make the culture we need more in touch with people, with them together. Envisaging more visitors could be planned activities with the nearby community for revolving its past through oral history in various visual or site-specific activities.

- ## Culture as inclusion

In recent years we are living in massive digitalization, and the changing of communication channels, which create new forms of expression between culture and audience. To a certain point a new phenomenon is arising when culture is perceived as doing something with the audience. This process of creation by doing is very common within the non - formal educational models of learning by doing. As it is confirmed ''This is where the practice of cultural activists meets that of social activists'' (Wisniewska, 2015, p. 15). Working together, collaboration is more important within the common process of recreation rather than on an individual basis. That is the case of the alternative space "HALE 3'' (Home, 2017) for youth culture, board games, a kitchen and a library which is housed in the former Poligrafiya building in Varna. However, the functioning of the alternative place was threatened by the owners of the building who in 2020 decided to increase its rent. Thus created a large support by the youth people across Varna and Bulgaria, through a presented petition " Support the Alternative Space Association and the HALE 3 project!", 2020). Like that they were seeking support in the negotiations held. "HALE 3" is formed by three spaces uniting people in the common idea of freedom,

independence and creativity. Since its creation in 2015 the main mission of the organization called "Alternative space'' is to keep as they say "Varna awake and active''. In an area of 700 m2, it is in the center of the city and stretches in three halls and a city terrace. The first hall is a constantly changing street-ramp track for extreme sports and lessons. The second hall is for audio-visual performances, concerts, cinema and shows, and the third hall is set aside for creativity, exhibitions, relaxation or a shared workplace.

Figure 6. Front door of Poligrafiya public building – "HALE 3", (2023)
Source: Own photo

Throughout the years the organization behind "HALE 3" - "Alternative Space" is working for the recognition and development of the space on local, regional and national level and as well for the contribution to the development of youth and youth cultural spaces. These forms of reactive protests opposed the economic agent of the privatizer, whose intention was as well to contain the functioning of the alternative place for youth cultural activities and to rearrange it. The process of privatization in Bulgaria in compliance with the Transformation and Privatization of State-Owned and Municipal-Owned Act (Transformation and Privatization of State-Owned and Municipal-Owned Act, 1992) started in 1993. During its ongoing procedures a strong decentralized approach to privatization was adopted and this helped it to maintain a relatively high degree of independence. Like this many public buildings functioning was totally changed as is the case of the Poligrafiya Varna. As being privatised its premises were transformed into small offices or partly reconstructed into a commercial building of a hotel. Existing public spaces like this started to degrade due to looser administration by local authorities. However the absence of places for youth culture, ramps for skateboarding urged the rise of activism by people being involved in non-formal education or alternative youth sport activities.

Figure 7. "HALE 3" main hall , (2023)
Source: Own photo

Becoming part of "HALE 3" either as a viewer or a participant in concerts it is easy to be involved in its operational process. New models of operation of cultural and youth institutions are being applied in its functioning. Daily or on certain events the managers of "HALE 3" invite participants to be involved as volunteers or in the re-creation process.The inclusiveness of the space for culture is also reassured in the numerous events - more than 100 concerts, 25 bazars, 60 exhibitions, 60 cinema screenings (Home, 2017). It is essential to mention that in cooperation with "For You'' NGO , they are implementing "European Solidarity Corps" projects as a hosting organization. The process of inclusiveness through cultural and youth activities is being implemented on a yearly basis involving not just volunteers from abroad but also local ones.

Figure 8. "HALE 3" Concert hall, (2023)
Source: Own photo

- **Culture as a social bond**

The accession of Bulgaria to the European Union in 2007 brought new opportunities to many young people to study and travel abroad. The intensive labor emigration enabled a part of the tendency of investing in capital but also to recognize more the value of solidarity. Nowadays more and more young people's mindset is focused on contributing to the society through cultural skills and recognizing them as contributing to the well being of the country. Culture is being equally valued as an issue in the debates as the theme of the commons in society. This was also one of the leading themes of the Art festival ''Emergence'' (Emergence Art Fest, 2023) held between 2 – 5 March 2023 in the vicinity of the public halls of Radio Varna station.

Figure 9 . *Official logo of the Emergence Art festival, (2023)*
Source: https://instagram.com/emergenceartfest

It was organized by a like - minded informal group of young people - Konstantin Zlatarev and Denitsa Balinova, whose common feature is that both of them have graduated abroad. In times when individualism is prevailing- remote offices, discourses on the need for capacity of working together, this youth cooperation is bringing to debate the need of social ties. Moreover, its motto was on promotion of emerging artists. As it is clarified by the organizers the etymology of the word 'emergence' comes from the Latin root 'emergere' and references the process of bringing something forth, bringing to light.

In line with the festival core principles was also to bring to public artists who have limited access to the digital domain. The festival enhanced on giving opportunities to exhibit artworks, to foster cooperation based on experimentation and to certain point projecting academic experience of the group of organizers from abroad. As one of the organizers Konstantin Zlatarev said in an interview "we want to create a space where, through collaborative practices, ideas emerge and are explored'' ("First Edition of Emergence Art Fest in Varna" ,2023).

The collaborative element in every session, presentation or exhibit where the audience was involved in discussion supplemented the complex theme chosen of 'emergence'– ''The whole is more than the sum of its parts'' ("First Edition of Emergence Art Fest in Varna", 2023). The complexity of culture in narrating the world, in establishing relationships, in creating a community among the dichotomy connection of public and audience were mediums followed throughout the programs. After all it brought personal discourses of the necessity to seek cooperation rather than self -resilience.

3. Conclusion

In addition, we are facing how young people, despite being exposed to the individualism which seems to be intensified by digitalization of the world, are more likely to seek cultural initiatives based on activism. Young people are bringing activism to the cultural spaces and scene in transforming historic heritage into a space for alternative visual forms of culture, in confronting economic interests for the goal of better representation and inclusiveness and in establishing social ties for the sustainability of the commons. Practices like these differ in their forms of recognition but are equally being validated by public authorities. However, the culture with the people based as well on strong practices of youth activism should continue to be supported with different public tools and mechanisms for the benefit of the operational status of the initiatives.

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Preliminary analysis of employer's required skills of accountants

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Abstract. The paper is aimed to analyse the required competencies (skills) signalled in jobs' advertisements for an accountant position. Content analysis is performed on jobs advertisements in job.bg and zaplata.bg. The coding framework is construed on the base of technical competencies (IES 2) and professional skills (IES 3) of IAESB. Research is preliminary which means that the formulated conclusions are not constructive and generalized. The findings of the research outline that the mostly employers demand is English language as a professional competency. Bulgarian employers require teamwork, collaboration and cooperation, critical thinking and time management. In conclusion, to be successful in the labor market accountants should possess more than technical skills. Also, employers' signals challenge the accounting teaching in competence-based manner and in transversal skills. Whether the topic received inadequate attention, the results can be useful in change management of accounting programs. Business entities can be advised about changing landscape of interconnectedness of digitalization, accounting duties and required competencies.

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1. Introduction

According to Kuhn not small revolutions but instead deep and structural changes led to revolutionize processes (Shortridge & Smith 2009). This logical chain can be translated to contemporary state of accounting as the accounting practices are formed due to transition to information economy and society. The need for information and its processing are huge (Shortridge & Smith, 2009). Furthermore, accounting services have become increasingly broader and diversified (Bui & Porter, 2010).

The spectrum of educational accounting institutions highlights the surge for accountants to develop behavioural, communicative and interdisciplinary skills. But HEIs find as hardship to bring the needs of the market in a reflective manner closer to curriculum (Strawser, Flagg, & Holmes 2000).

Trying to dissolve education into business and conversely, perpetuum mobile of demand and supply of skills continue to disrupt education, business and students' perceptions. Thus, accounting as practice and science is facing with 1) paradigm shift as well as changes in the way work force and what is expected from it, 2) transversal challenges with large impact on profession and accountants' role and 3) difficult choices in regard to the ways students and professionals prepare and cope with changes and challenges, in a lifelong and self-learning perspectives.

Obviously, the accountant's job has undergone significant changes, both in terms of the roles and competencies to their execution:

1. Expanded responsibilities: The accounting job is evolving gets more interdisciplinary, requiring accountants to possess broader skills and responsibilities (Carnegie & Napier 2012).

2. Ethical Standards: There is an enduring need for strong ethical standards and practices within the profession.

3. IT Competence Accountants need strong IT competencies to navigate through modernity, effectively.

4. Impact of AI: The widespread use of Artificial Intelligence (AI) has significantly affected the profession, enabling the automation of many structured and repetitive tasks (Kokina & Davenport 2017).

5. Professional Skills: There is an urgent need for accountants (students) to improve their soft skills, such as communication and interpersonal skills.

One of the primary catalysts for change in the accounting profession is the onset of the Fourth Industrial Revolution (4th IR), marked by the introduction of artificial intelligence. This technology has expanded the scope of automated tasks within the profession.

Today, accounting tools allow for the automation of many routine and predictable tasks, which were once the core of the profession. Nowadays merely recording of assets and passives, costs and incomes is seen as a too narrow definition of accounting (Jackling & De Lange 2009).

As market dynamics shift from politics to economics, there is a growing demand for timely and reliable information to support decision-making both within and outside of business entities (Haller 2002). This has led to a more sophisticated approach to reporting. Financial accounting is evolving into business reporting, which includes variables like human resources, production control, and sustainability (Lai & Stacchezzini 2021). The relationship with a company's stakeholders has also become a key aspect, making accounting as practice and science a more interdisciplinary and complex field (Carnegie & Napier 2012).

World Bank Group pointed out the crucial role of accounting education in economic growth and sustainability. In the private sector, accounting legitimizes and enhances confidence in accounting information, which, in turn, attracts more investments. In the public sector, it fosters transparency and enables more efficient resource management (Venter, Gordon, & Street 2018). Accountants' awareness of the impact of their actions on the public and their development of social responsibility are fundamental for the continued relevance of the profession (IAESB 2014).

The idea for the diverse tasks and responsibilities of an accountant is not new (Bui & Porter, 2010).

However, accountant is also information users, which perspective is often neglected as it can be testified by some cases as "Monsanto Whistle-Blower", Saytam, Carillion and Luckin Coffee.

At times, accountants may compromise their professional ethics and to put society and information users at risk. It is the accountant's duty to alert about errors, irregularities, and fraud, ensuring the independence of their work and not colluding with unethical practices.

The introduction of information technology in accounting has brought about two types of changes in accountants' work. Firstly, it has led to the development of new methods and working models that rely on information technology. Secondly, it has created a demand for new skills among accountants to effectively process and produce information using these technological resources.

At a more advanced stage, we are witnessing the integration of artificial intelligence (AI) into the field of accounting. Like other information technologies, AI has given rise to a suite of tools designed to meet market demands and enhance the efficiency of human resources in this profession (Trigo et al. 2014).

Marshall & Lambert (2018) argue that the introduction of AI in accounting does not aim to eliminate human jobs but rather seeks to enhance human capabilities by improving their performance. AI allows human resources to focus on unplanned tasks that require emotional intelligence and interpersonal skills. This phenomenon is referred to as "augmented intelligence" (Marshall & Lambert 2018).

Optimistically, AI can overcome human limitations, expanding the spectrum of human intelligence, but from a pessimistic view, it could lead to humans being subordinated to AI's autonomous decision-making capacity, resulting in dependency (Makridakis 2017).

The size of a company plays a role in the type of employability in accounting field. Small and medium-sized companies prioritize technical and professional competencies, while large companies primarily seek candidates with behavioural ones. These larger corporations value critical thinking, proactivity, communication skills, and a visionary mindset (Bui & Porter 2010). While technical competencies are universally considered essential for improving the quality and legitimacy of produced information, non-accounting and vocational competencies have gained importance in response to market demands over the years.

Increasing market competitiveness has compelled accountants to develop a broader range of competencies, including those related to behavioural competencies and information systems (Bui & Porter 2010). A diverse skill set not only aids in daily accounting tasks but also enables accountants to adapt to unstructured problems. In the case of information technologies, a wider skill set contributes to efficiency. However, both behavioural and information technology competencies are in short supply in the curriculum of accountants, and they are considered critical for the future of the profession (Bahador & Haider 2012).

Both science and practice have witnessed "competency boom". However, there is overlap and misunderstanding of competence and competency. Clear apprehension can contribute to consistent methodological basis in research area, educational services and in practice, ascertained by era led of technological development and innovations.

The absence of agreement on the definition of competency-based education (CBE) forms the basis of this study and emphasizes its importance.

Problem of accounting education is that higher education institutions (HEIs) in Bulgaria operate in business and state regime, not placing the seeds of knowledge conforming to individual needs. Because accounting can be a valuable instrument for learn more for society, man himself and what man can do and achieve. University entry-exit system rely on double-entry method, its application with tasks, memorizing theoretical statements and other traditionalistic methods. Basically, human capital is not considered as something individual, as a separate social unit, but as something mass. Although it can still be argued that accounting education is far from keeping pace with advanced technology. And this is easily confirmed by the large number of graduates, bachelors, who are difficult to realize in the market, because they have to secure employment by themselves through their individual qualities in the free market.

Tilt (2010) discussed some conflicting interests between academics and business practice:

• Academics use complex mathematical formulas and the practitioners are left in the dark of them.

• Business practitioners seem to be uninterested in challenges which can transform the status quo.

Business shows reluctance to help researches and to take part in accounting education but with excuses with trade or company secret.

However, business is well positioned to give recommendations of the academics as universities have opened career centers, alumni programs and each year students have internship. And there is no data of how many now practicing accountant and auditors would choose an accounting education if they have the chance to do it again. Besides that, this indicates a serious problem at the profession's most vulnerable point: the quality of its professionals.

And the labour market is highly competitive.

Probably the curricula do not seem to reflect the need of the business (reflexivity of accounting education). Higher Education Development Strategy in the Republic of Bulgaria for the period 2021 – 2030 mentions "building an effective education-science-business connection" (Strategy for the Development of Higher Education in the Republic of Bulgaria for the period 2020-2030, 4). Science is the linking component. But how education can fit to business need? The paramount issue of 21st century for reformation of Bulgarian higher education is vague as the educational system in the country is struggling with 1) diminution of students and 2) obsolete curricula. And in regard to economics and accounting majors in particular 3) the quantity of students who can enlist is bounded by state policy for "protected educational majors". Therefore, situation of accounting education and accounting practice soon will be quite challenging: the labor market and internationalization of companies requires enhanced skills, especially soft skills, while traditional already graduated accountants are equipped with rough technical skills. And is fairly to mention that students felt "math anxiety" which makes them give up studying accounting or just do not want to practice it after all.

The rapid changes in society, technology, and business forces all to be better armed with knowledge and to maintain constant self-education in order to be prepared for highly competitive labor market. As technologies make some manually processed tasks, there is emerging need for strengthening of professional skills as critical thinking, professional skepticism and communication skills. This perception is further provoked by the following (Fülbier & Sellhorn 2023):

1) As information needs change the business witness changes in financial and sustainability reporting where sustainability disclosures are positioned as key potential solutions to social problems. And not surprisingly IFRS Foundation is at the very much of the centre of this.

2) The long-standing shareholders and creditors perspective is changing into a stakeholder perspective (Mayer 2020). The significance of financial capital has become less scarce to some extent while skilled employees are becoming scarce especially in countries as Bulgaria where demographic problems and brain drain gaining more and more attention.

There are changes in information need of the public which are historically ignored by standard-setters and government which exercise its fiscal authority. Both are closely related as the public is interested because they suffer (or benefit) from the externalities that firms cause. Those market failures are objectives of government rules whereas state acts as a guardian of their interests.

Political crises, COVID-19 and war in Ukraine are material events which are signalling for societal developments and highly unstable institutional setting. Those are forces that requires actors to adopt presumables for high degree of uncertainties in the planning.

3) Generation and aggregation of information is becoming more technical due to development of digitalization and automatization. There are dramatic transformations of industries and business models, disruptive changes in information technology. Artificial intelligence will much more improve information processing in foreseeable future.

Undoubtably, deliberately professional skills become cornerstone of the future careers of graduated accountant as business landscape is changing and in order to mitigate the asymmetries between accounting

education and business requirement. Technical and professional skills should be educated and developed in a balanced manner.

Thus, the paper aimed to analyse the required competencies (skills) signalled in jobs' advertisements for an accountant position.

2. Literature review

2.1. Defining "competence" and "competency"

Ambivalence of "competence" (Schneider, 2019) and "competency" are applied as synonyms in accounting field despite their difference in some countries (IFAC 2003). However, the paper outlines some definition.

The etymological basis of "competence" is the Latin word "competens" -entis – „capable".

In different languages the term brings the following connotations:

- In Bulgarian "competence" is competent; awareness (BAS 1993);
- in English "competence" is also characterized as ability, knowledge; prosperity, material support; eligibility (Oxford Learner's Dictionary of Academic English 2022);
- In French, "la compétence" means to lead; awareness; legal jurisdiction; specialist; knowledge of the rules of the language (Collins Dictionary 2022);
- In German "Kompetenz" is defined as authority; conducting (smth.); legal jurisdiction; competition. The term "competent" includes such definitions as "applicant", "competitor". (https://www.verbformen.com/declension/nouns/Kompetenz.htm);
- In Italian, "competenza" is competence; conducting; authority; amount due; required amount; rivalry. The verb "competere" is translated as "compete, compete; compete; participate in the competition; argue; to follow, to follow, to owe; fall within the competence" (La Grassa 2021).

Mostly the term seems to emerged in the field in recruitment of personnel in USA and Europe in 50s of 20 century. Its operationalization is through personality properties and motivational factors that determine the effectiveness of a particular activity.

The concept of "competence" is being used primarily for cognitive development. Semantically, Chomsky opposed the "language competence" to the term "language use" (Parisse 2005). According to Bozhovich (2018, 4) the difference in the meanings of these terms is revealed as the difference between the "speaker-listener" knowledge of the language (abstract knowledge of the language) and the use of the language in the practice of communication and human activity (the actual use of the language). Competence is related to logical truth, and the use of factual truthiness.

The definition of OECD DeSeCo-Project is of considerable importance and in accordance with Weinert's definition of competence: "A competence is defined as the ability to meet individual or social demands successfully, or to carry out an activity or task" (OECD 2002, 8).

In the late 70s in Europe, the term "competence" has been used to describe the results of performing specific activities and their compliance with standards. The concept of "competence" describes the effective performance of activities (Raven 1984). Raven (1984) mentioned some "types of competence": psychological (self-confidence; self-control; critical thinking, etc.); and socio-psychological (ability to work together, to resolve conflicts, to work effectively as a subordinate, etc.).

In the beginning of 90's the concepts of "competence" and "competency" are key in the Program documents of states and public organizations (Council of Europe, UN, UNESCO) and acquire a new meaningful description. The concept of "competence" is defined in a broader social context as "…the ability to cope with various multiple situations and work in a group" (Tinoca 2013). "Key competencies" are considered as "the essence of the most general and broadest definition of an adequate manifestation of a person's social life in modern society" (Tinoca 2013) and include political and social competencies; competencies related to life in a multicultural society; competencies related to the possession of communication; information competencies; the ability to learn.

Hoffman (1999) defines concept of "competence" as 1) a visible and fixed result of activity; 2) as a certain standard for the performance of a particular type of work, and 3) as a personality property that determines the effectiveness of a particular activity. In particular Hoffman (1999) believes that the first and second of the approaches are associated with the "Output" of the system, and the third - with her entrance.

In compilated overview of the essential results of the reviews of literature Schneider (2019) found that from interactionist and constructivist perspectives the characteristics of concept of competence are "…as the equivalent of a normally successful performance of a type of state changes (ability), …, and the changes of state (demands) set from outside to be brought about, on the other". He proposed an innovative way of defining the

concept of competence in case of its operationalization. Schneider (2019) found that "competence focuses on the ability of a person to manage demands" and that "…competence also fulfils a purpose of development".

Competency is more than knowledge and attained level of skills. It requires to their usage in order to reach effectiveness in certain context (Egodawatte 2014). Competency is more than a particular outcome from learning process. It is proned to measurement and verification by achievement. The "competency" can be used in conjunction with learners-centred approach or performance-based education (Le Cecilia et. al.,2014).

On the one hand, etiologically, "competence" and "competency" are individual's compliance with externally given conditions, actions that are performed jointly as well as the consistency of parts, their proportionality and connection. On the other, semantically, the concepts are different. They share some blurred boundaries as in Bulgarian language "competence" is defined as a legalized range of issues, powers, rights of a person. And the concept of "competency" is viewed as a skill, an ability, a personal characteristic of the subject, which makes it possible to interact effectively in various social situations.

The term "competence" has a long history in societal and pedagogical sciences and no uniform definition. Borgonovo et. al. (2019) stated in the World Bank Report "competence is the ability to execute, in the real world, relevant tasks to a specified level of proficiency. Knowledge and understanding alone do not result in competence. Competence requires the effective application of relevant skills and particular attributes, which is usually only possible after undertaking specific practical experience" (Borgonovo 2019).

Meanwhile, in the paper competence is considered as a predetermined requisite, a generalized mode of action that some person is capable to solve a problem effectively. Competency is a set of specific personal characteristics that manifest themselves in the system of attitudes and behaviours, including the implementation in activity.

2.2. State-of-art of competency-based model in accounting education

On an international scale, the IAESB has issued a framework and education standards that aim to facilitate the global mobility of competent professional accountants through ''learning and development" and deal with initial and continuing professional development as well as assessment (IAESB 2013, p.1). The work of IAESB is supported and facilitated by International Federation of Accountants (IFAC) (IFAC 2009). The IAESB has taken a principles-based approach to the achievement of its vision and mission through its three principal instruments: (1) a "conceptual framework for international education standards for professional accountants" (IFAC 2009), (2) its International Education Standards (IESs), and (3) their Exposure Drafts (EDs) and other supporting documents. The IAESB is undertaking an ambitious "Revision Project" of the suite of eight standards it had issued previously and "the Project is planned to be completed by the end of 2013 and the resulting IESs to be effective after June 30, 2015" (IAESB, 2013). IAESB Framework defines "Competence... as the ability to perform a work role to a defined standard with reference to working environments" (IFAC 2009).

Change in paradigms shift is observed in the late 80's of 20 century. The Bedford Committee on Future Accounting Education (AAA 1986) and Big 4 issued papers that alarmed the inability of accounting education to respond to changes in business environment. The Bedford Committee on Future Accounting Education stated that the accountants in 21st century need to be equipped in addition to technical competence with "creative thinking, learning to learn, lifelong learning, and communication skills" (AAA 1986). In White paper Big 4 asserted that "accounting graduates should have a broad array of skills and knowledge" (Perspectives 1989). The critics to contemporary accounting education brought to surface the following:

- Absence of strategic usage of accounting information vs. prevailed production of accounting data (Elliott and Jacobson 2002, 75);
- Doubt about cost-benefit of accounting education;
- A lack of integrative approach in accounting education reform;
- Questioned accounting as academic discipline (Demski 2007).

In complementary to those critics some specific related to Bulgarian context could be:

- Marketing tactics (fishing) for attraction of students in accounting majors;
- Lack of vision for teaching accounting in universities;
- Persistence of teacher-centred approach;
- Quantity vs. quality of academics' publication as a measure for their ongoing (sustainable) teaching know-how in specific accounting area.

Notwithstanding Schadrie et al. (2012, 5) admit that "an undergraduate degree in accounting is a worthwhile investment".

Historically, efforts to reform accounting education have led to pockets of innovation but have not systematically addressed impediments that inhibit widespread continuous improvement.

Those critics resulted in calls for comprehensive reforms, namely based on two models with different perspectives (Behn et.al. 2012):

1) Professional: includes the frameworks of AICPA, IFAC and IMA. They guide assessment of skill, the career path and talent management.

From the professional perspective, professional bodies have drawn up several competency frameworks (e.g., AICPA, IFAC, and IMA). These are intended to guide skills assessment, career development, and talent management within the profession. On the other hand, several professionals, who apply competence management in practice, have dedicated books on identifying, categorizing, and using competencies and competency models (da Camara et.al. 2017).

The American Institute of Certified Public Accountants (AICPA) has recently updated its Framework, which includes suggested Educational Standards (ES) for aspiring CPAs. The Framework identifies three key competencies:

1. Technical Competencies: These are further categorized into several areas, including risk assessment, analysis, and management; analysis and decision-making; measurement and reporting; research; and technology, systems, and process management. These competencies encompass a wide range of technical skills and knowledge necessary for a CPA.

2. Organizational Competencies: This category includes competencies related to strategic management, performance management, resource management, and environmental, social, and governance (ESG) management. These competencies focus on understanding and managing the broader aspects of an organization.

3. Leadership Competencies: Leadership competencies encompass ethical behavior, critical thinking, collaboration, self-management, and communication. These competencies are essential for CPAs to excel not only in their technical roles but their leadership and interpersonal as well.

Some of the above-mentioned competencies often involve action verbs associated with higher levels of learning in Bloom's Taxonomy, such as analyse, evaluate, and create. However, some competencies, like "Identify relevant information to measure", represent the lowest level of Bloom's Taxonomy, which is knowledge-based. These competencies are framed at a high academic level and can be applied to various accounting courses.

In USA AACSB (Association to Advance Collegiate Schools of Business) is a highly regarded accrediting body that is valued by prospective students and employers. AACSB's mission is to foster engagement, accelerate innovation, and amplify impact in business education. The AACSB 2020 Standards emphasize the importance of competencies beyond rote knowledge in business education.

The AACSB emphasizes that competencies and curriculum management processes should align with the expectations of stakeholders, including organizations employing graduates, alumni, learners, the university community, and policymakers. The AICPA's competencies can provide specific guidance for accountancy programs seeking to meet these standards.

The AACSB issues separate accounting standards for accounting programs seeking accreditation. These standards outline suggested accounting content for different degree levels. They encompass a mixture of skills/competencies (e.g., critical thinking, professional scepticism) and technical content (e.g., internal controls and security). Notably, technology, especially data analytics, has gained prominence as a crucial component of accounting education.

Both the AICPA and AACSB provide guidance and standards that emphasize the importance of a wide range of competencies, including technical, organizational, and leadership skills, in accounting education. These competencies are essential for aspiring accountants to excel in their roles and meet the expectations of employers and stakeholders in the field.

2) Educational: consists the International Education Standards (IES) issued by the IAESB. However, there is difference between standards and competency. Simply, "What" is learned refer to standards, while "Why" students learn means competency (Bramante & Colby 2012).

At the educational (international) level, there are the International Education Standards (IES) issued by the IAESB (up to now this responsibility is passed to the International Panel on Accountancy Education). These standards are increasingly applied globally, leading more and more researchers to use their structure to study the supply of competencies. In the context of this study, technical competence (IES 2), professional skills (IES 3), and professional values, ethics, and attitudes (IES 4) are the competencies focused on.

IAESB is developing as most prominent organization which strive on advancing/converging accounting education no matter different environments, regulations, institutions, and practices. As McPeak, Pincus, and Sundem (2012, 6) noticed: "While there is general agreement that professional competence is developed and assessed by the 'three E's' - education, experience, and examination (assessment) - there are a variety of approaches to each of the E's." (McPeak et.al. 2012). Decline in accounting education is global fact for a long time (Atanasova, 2022).

According to Norman et al. (2018) there is a need for identification of competencies of accounting graduates and to understand the business requirements. Norman et al. (2018) found 16 competencies where communication skills, professional demeanour and analytical skills are priorities for the employer. Additionally, accounting graduates score above expectations on information technology (IT) skills (Norman et al. 2018).

Following Norman et al. (2018) and Zainuddin et al. (2019) personnel demographic is changing as nowadays Millennials encompass almost half of the human capital. Millennials are comfortable and confident using technology (Cleyle et al. 2006).

Analysis of ACCA (2016) that "the professional accountant of the future will need an optimal and changing combination of professional competencies: a collection of technical knowledge, skills and abilities, combined with interpersonal behaviors and qualities" (ACCA 2016).

A employers seek candidates with technical ('hard') skills, digital technology skills and behavioural skills (Birt et al. 2019).

„Technical-competence are classified by the proposed model into two sub-types as follows: (a) Technical competence "Accounting", and (b) Technical competence "Broad Societal and Business Perspective"'. This model proposes the following competence areas for technical competence "Accounting": financial reporting and analysis, management accounting and control, income tax accounting, accounting information systems and IT, audit and assurance, enterprise risk management and governance, accounting for nonprofit organizations, and strategic accounting and auditing (Berry & Routon 2020, 53). Technical competence "Broad Societal and Business Perspectives" (AICPA 1999) has the following competency areas: liberal arts, business and organizational environments and systems, business laws and regulations, strategic management and organizational behavior, corporate finance and financial management, international business and globalization, and quantitative business analysis and modelling.

Besides what Berry et.al. (2020) define as an academic's satisfaction from technical skills of students it is worthy to pay more attention to the development of softs (transversal) skills.

Digital technology skills consist ICT elements (IAESB 2019). Similarly, the AACSB, in a recent report, suggested that 'accounting degree programs include learning experiences that develop skills and knowledge related to the integration of information technology in accounting and business. This includes the ability of both faculty and students to adapt to emerging technologies as well as the mastery of current technology' (AACSB 2018).

In addition, ICT competencies should be accompanied with soft skills which enable duality in accountant's job. Shortly, this empowers, on one hand, accountant to generate and aggregate accounting data and on the other, to extract business value from it for decision-making. This imposes the accountant to act in traditional way while incorporating disruptivity (creativity). Make noticeable the fact that attitude and morality should precede skills and ability at all. This ideal is attained to International Education Standard (IES) 4 which prescribes learning outcomes for professional values, ethics, and attitudes that the initial professional development of aspiring accountants should offer.

The same document stated that behavioural competencies should be taught firstly in order to intertwin both types of competencies further on to meet the needs of the labour market (IAESB 2014)

Of course, some authors proposals regard to manage both in parallel (Asonitou 2021).

Furthermore, IAESB's strategy (2017–2021) proposed development of futuristic program focused on professional competence and the evolution of the knowledge, skills and behaviour needed in ICT (Birt et al. 2017). Birt et al. (2017) identified key areas of ICT, including big data and data analytics. And IAESB developed IESs to capture the "additional ICT skills required" (Birt 2017). To support this standard update, the IAESB completed a survey of IFAC members and the public and reported a number of ICT skills that should be focus areas, including digital technology awareness, data interrogation, data protection, data analysis, data security, data mining, audit data analytics, training in enterprise resource planning (ERP) systems, visualisation tools and big data (IAESB 2019).

The two perspectives are interconnected by competency-based approach (model).

IAESB defined it as "an outcomes-based approach in integrating technical competence, professional skills, and professional values, ethics, and attitudes." (IAESB 2019, 6).

Gervais (2016) found it as "a synthesis between a liberal arts education and the professional education movement". Everett (2019) considered competency-based approach a redesign of the system that has developed over the last two centuries (Everett 2019). Competency-based approach can be identified by the following attributes:

1) Learning is not designated by place and time (Ryan & Cox 2017);
2) Time is variable, while performance is a constant (Stafford 2019);

After all there is no single definition in literature but various definitions have much in common.

The IAESB has classified competencies into three different types: "(1) technical competence, (2) professional skills, and (3) professional values, ethics, and attitudes" (IASB 2022).

Technical competence is "the ability to apply professional knowledge to perform a role to a defined standard" (IAESB, IES2 ED 2012, 6). According to IAESB IES2 ED each of them have diapason of 11 competence areas as well as learning outcomes and minimum proficiency level.

Professional skills are specified by IAESB as "four competence areas - personal, interpersonal and communication, organizational, and intellectual skills - and learning outcomes and proficiency level linked with them" (IAESB, IES3 ED 2012).

And least but not last for the professional values "each IFAC member body shall provide ... a framework of professional values, ethics, and attitudes". Some learning outcomes and proficiency level linked with them are given in the IES4 ED.

The concept of key competences is fundamental for the Act on Pre-school and School Education (PSE) in Bulgaria and has been consistently carried out in the secondary legislation. Thus, for example, general education preparation is directly linked to the acquisition of the 8 key competencies from the Framework, while at the same time a 9th competency, significant for Bulgarian educational system - skills to support sustainable development and for a healthy lifestyle and sports - has been derived. Curriculums build on these key competencies.

But there is no competency-based approach application in university education. The politics strive to connect higher education and the labour market in Bulgaria on the base of soft skills. The latter are known as professional, generic, key, transferable, transversal, vocational or employability skills.

The current paper exploits the term "professional skills" on the base of International Education Standard (IES) 3. IES 3 recognizes professional skills to include skills classified as intellectual, interpersonal and communication, personal and organisational, along with technical skills and personal values and attitudes (IFAC 2014).

A full transition to competency-based curricula is still away whereas some kind of match between them can be achieved in vocational training or further education after graduation.

2.3. Related researches

In the topic related literature, the theme of accountant's knowledge and skill is researched from different perspectives – businesses, higher education institutions, accountants graduates and professionals. There are identified arrays of possible educational gaps and expectation–performance gaps.

This section of the paper will discuss some recent findings from the employer's perspective.

According to Jackling and De Lange (2009) investigate technical skills (accounting problem analysis, key accounting skills, computer skills) and generic skills (written communication, oral communication and teamwork). The study find that employers expect better mastery of professional skills vice versa technical skills. Technical knowledge alone is not an option for business as it requires additional professional ones (Carvalho & Almeida 2022; De Lange et.al. 2006; Dolce et.al. 2020)

There are conflicting views about the importance of technical skills vice versa professional skills.

For instance, Jackling and De Lange (2009) consider that employers rate the importance of non-technical skills above technical ones. Despite Rebele and St. Pierre (2019) argue about the dominance of technical skills during accounting education.

Carvalho & Almeida (2022) believe the most important skills are communication skills, analytical, critical-thinking and problem-solving skills. In turn, teamwork is considered by Paguio and Jackling (2016) from greater significance. In correspondingly paper, Dolce et al. (2020) find that employers prefer employee with good interpersonal and communication skills and that professional skills are much more valued than technical skills. Carvalho and Almeida (2022) extend the desired skill's list with communication skills, many other professional and personal skills (work under stress, proactivity and to be initiative). In addition, Plant et al. (2019) note also individual properties as self-management and time management. Daff et al. (2012) accentuates the importance of a broader skill set for accountants, including emotional intelligence, along with other professional skills.

As concluded in literature there are many sets and types of professional skills of accountants, weightings differ. But all in all, versatility is closely regarded in some researches (Al Mallak et.al. 2020; Douglas & Gammie 2019; Dolce et.al. 2020).

By countries researches distinguished following employer's preferences for job skills of accountant:

1) Malaysia: the most desired are skills in information technology, interpersonal and personal skills (Ismail et.al. 2020)

2) Saudi Arabia: communication, team work, emotional stability and analytical thinking skills are top ranked (Ebaid,2021)

3) Macedonia: employers give more importance to oral communication, ethical attitude and credibility, commitment to life-long learning (soft skills) and ICT skills (Atanasovski et.al. 2019)

4) Brazil: most preferred skills are leadership, communication, interpersonal skills (Kwarteng & Mensah2022), critical thinking, problem solving and teamwork (Lira et.al. 2021)

5) Australia and New Zealand: interpersonal and personal are the most frequently requested skills as "good communication skills appeared to be the most valued behavioural skill" (Tan & Laswad 2018)

6) Asia: communication skills, analytical skills, critical thinking skills, time management skills, ICT skills, teamwork skills and interpersonal skills are most highly valued by employers.

3. Methodology

Research of the job advertisements for accountants is based on content analysis. Methodology is replicated from Tan and Laswad (2018). The study explores content analysis of skills required in job advertisements pertaining. This is commonly employed technique in social science. The desired skills of employers are coded with "0" or "1" if they present or absent in the job advertisement. The coding framework is based on IFAC technical competencies (IES 2) and professional skills (IES 3). They are divided into general competencies/skills (C) and then separated into specific competencies (S) (Appendix). Through inductive method after job advertisements review, another dimension of professional skills (S) is added – (S5) "Language" and it is subdivided in English (S5.1) and Other (S5.2) Consequently, the final coding framework consists 16 technical skills, including one complimentary.

The gathered data is from 829 online job advertisements, publicized in jobs.bg and zaplata.bg for the period 01.03.2023 – 20.04.2023. The search is performed by keywords "Accountant". After eliminating of duplicated advertisements, the sample consists 682 jobs positions.

The coding is performed in MS Excel.

After collecting and coding the advertisements, descriptive statistics is used to identify the most and least frequently required competencies.

For aach general competency there are different number of specific competencies. For example, C1 (Accounting and Financial Reporting) is divided in 6 specific competencies while C7 is made up of 3 specific competencies.

In order to standardize the results for each specific competency is calculated average weight in percentage: the overall result for each specific competency for the whole sample (for example, S5.1 English, score 251) is divided by the total for particular general competency S5 (322).

4. Results

4.1. Results about technical competencies

On Table 1 (Appendix 1 present full data) are presented the 10 specific competencies from 11 generic categories that are mostly demanded by employers.

The most demanded specific competency is C4.1"Explain national taxation compliance and filing requirements", presented in 63,31% of the advertisements, followed by C6.4 "Analyse the components of internal control related to financial Reporting" (58,28%), C10.3 "Explain the different types of market structures, including perfect competition, monopolistic competition, monopoly, and oligopoly" (57,69%), C8.4 "Use ICT to analyse data and information" (54,88%) and C9.1"Describe the environment in which an organization operates, including the primary economic, legal, regulatory, political, technological, social, and cultural aspects" (52,08%). All 11 technical skills are represented.

The C1 "Accounting and Financial reporting" is most required by the employers -17,43%. Within C1 most required are C1.2 "Apply International Financial Reporting Standards (IFRSs) or other relevant standards to transactions and other events" and C1.4 "Prepare financial statements…", respectively with 28,93% and 26,09%.

Table 1.

Ten most required technical skills

C4.1	Explain national taxation compliance and filing requirements	63,31%*
C6.4	Analyze the components of internal control related to financial reporting.	58,28%
C10.3	Explain the different types of market structures, including	57,69%

	perfect competition, monopolistic competition, monopoly, and oligopoly.	
C8.4	Use ICT to analyze data and information.	54,88%
C9.1	Describe the environment in which an organization operates, including the primary economic, legal, regulatory, political, technological, social, and cultural aspects.	52,08%
C7.2	Explain the laws and regulations applicable to the environment in which professional accountants operate	48,91%
C2.1	Prepare data and information to support management decision making on topics including planning and budgeting, cost management, quality control, performance measurement, and comparative analysis.	47.96%
C3.2	Analyze an organization's cash flow and working capital requirements.	41,24%
C9.2	Analyze aspects of the global environment that affect international trade and finance	37,50%
C11.3	Analyze the external and internal factors that may influence the strategy of an organization.	33,82%

Source: Own calculations

*Note: Each result (C4.1) represents percentage of the total mentioned general competence (C4).

Another highly demanded technical skill is C7 "Business laws and Regulations (Intermediate)" of which C7.2 "Explain the laws and regulations applicable to the environment in which professional accountants operate" is represented in 48,91% of the advertisements.

On third place significant technical skill category C2 "Management accounting" with skills C2.1 "Prepare data and information to support management decision making on topics including" (47,96%) and C2.4 "Analyse data and information to support management decision making" (31,57%).

Interestingly, the presented findings do not correspond to the results of previous studies where C8 "Information and communications technologies" is one of the most required by the employers. So conversely to the Australia, UK, Italy, and Canada ICT skills of accountants in Bulgaria are not essential for finding a job. Employers' advertisements do not show signalling for ICT knowledge. While the list of competencies is long, we can conclude that the usage of ICT is not highly valued by employers excluding C8.4 "Use ICT to analyse data and information". It defines the expectations of employers that the accountant must have strong analytical skills, dissect and make sense of complex data and information via ICT.

More, some of the findings differ from those found so far in the literature, such as knowledge related to Economics (C10), which is not present in any of the advertisements collected by this research. However, in Low et al. (2016) it is considered as one of the general competencies most required by hiring companies.

4.2. Results about professional competencies

Figure 1 presents the 25 professional skills required by the employers in job advertisements.

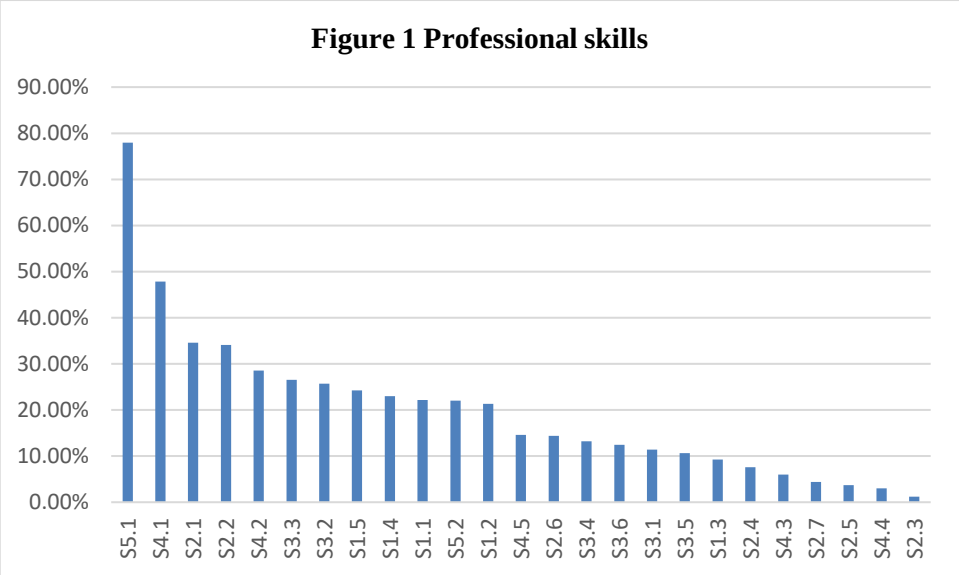

Figure 1. Professional skills
Source: Own calculations

The most desired by employers is the added S5.1 "English proficiency" (77.95%) which absent from IES 2 and IES 3. But it is necessary to add English as second language as it is frequent requirement job advertisements. And moreover, IAESB recommend higher education institutions (HEIs) to adapt a structure of professional competencies which suits best local and regional needs. As such the English is highly preferred by employers adding a layer of mastering of communication of accountant's job.

Secondly S4.1 "Undertake assignments in accordance with established practices to meet prescribed deadlines" (47,83%) employers insists the applicants to follow keep work done according to the established practice and to keep deadlines.

After that S2.1 "Demonstrate collaboration, cooperation, and teamwork when working towards organizational goals" (34,60%) and S2.2 "Communicate clearly and concisely when presenting, discussing, and reporting in formal and informal situations" are most significant skills for "Interpersonal and communication" (34,07%) which employers demand from applicants. The teamwork is a prevailed skill (S2.1) in other studies from Italy, Australia and New Zealand (Tan and Laswad 2018; Dolce et al. 2019).

All in all, it can be stated that organizational skills are dominating in employer's requirement in comparison to intellectual skills. Findings suggest that employers from Bulgaria overlook intellectual and personal competencies.

Notwithstanding, the job market is looking for accountants with English language as second, with communicational and organizational skills.

Communication (S2) in itself may be too broad of a category as it combines verbal and written skills as well as presentation abilities. Communication more specifically defined relates to the ability to effectively inform, influence, persuade and drive decision making. The ability to communicate effectively is extremely important in the business world made more complicated by the growth of social media. The advent of social media communication has only made the ability to get a message across clearly even more critical. Everyone, regardless of their level or position, is representing the company on a continuous basis and is why businesses place a high value on effective, clear, and positive communications skills.

Learning to communicate well should be a top priority for anyone aspiring to lead or advance in a career. Strong technical skills are needed, but technical ability alone will not result in career advancement. Those who develop only technical skills always will work for people who have both, and communication is the key ingredient.

5. Discussion

Accounting education does not exist in isolation. As such, it should always reflect the needs of the business as the bond education-science-business is paramount. From that point of view essentially the curricula should reflect practical and theoretical issues. Lecturers and people, taking-decisions, are responsible for "arming" the students with technical skills and professional knowledge. In my practice few accounting principles and concepts are seemed as hardship into the introductory course in accounting. Truan & Hughes (1999) argue

that the main purpose of accounting education is "...subsequent individual emotional self-development towards maturity, interpersonal effectiveness and general psychological well-being of students" (p. 31). Moreover, accounting education can improve the decision-making process regarding personal financial and economic affairs. Accounting knowledge can be an effective tool in solving various challenges, in professional and personal life.

Technical skills will continue to be necessary but not sufficient. Professional skills should be practiced according the university accounting programs. A scientific and methodologic obstacle is the implementation of soft competences. Furthermore, both should be are interrelated within a common framework of the accounting program.

Kermis & Kermis (2010) state that "Technical skills are necessary but not sufficient for a successful accounting career, this includes the selection, retention and advancement of the individual" (p. 1). Skills that should be included in higher accounting education include professional skills, emotional intelligence, time management and other soft skills such as teamwork and public speaking skills (Kermis & Kermis 2010). The analysis presents the need for teamwork (S2.1) and English skills (S5.1). In reality accounting courses have tended to underestimate the importance of certain soft skills (e.g., communication) in favor of technical skills (Dolce et al. 2020). Nevertheless, as students become professionals or employees, their opinions also tend to become more aligned with those manifested by employers, supporting the existence of the gap (Yu et.al. 2013) and increasing, also, their competence awareness (Bautista-Mesa et al. 2018)

In the case of teamwork skills, there should be tried interventions aimed at cooperative learning and teams (Tan 2019), simulations, games or team-based learning design (Christensen et al. 2019). Cooperative learning design have some advantages because it helps not only for development of the specific technical skills but also it is valuable instrument for I improvement of overall quality of learning (Johnson & Johnson 1987). The accounting subject can be seen as much more attractive for the students, though. (e.g., Caldwell et al. 1996).

English language programs in accounting are utmost to zero importance for accounting departments. They can legitimate universities in the international field. Simply, whereas IFRS led main stakeholders to support and recognize companies, English programs in accounting may make HEIs and graduated students highly valued from business / enterprises. As users of knowledge of the students the enterprises may find employee more valuable. Network effect in real economy may be observed and minimize cost for vocational education of the newly hired.

An alternative is English-medium instruction (EMI) which swiftly is becoming mainstream in Higher Education Institutions (HEIs) where English has traditionally held a foreign language status. While the reasons for this are varied (Doiz et al. 2013), in Europe the consolidation of the European Higher Education Area (EHEA) has resulted in the use of English as language of instruction as a means to attract both international students and staff, and develop trans-national research and networking. Additionally, the use of English as language of academia, research and the Internet remains uncontested, as the growing number of publications, journals and conferences in this language clearly show (Mauranen, Hynninen, & Ranta 2010). In the specific case of Business Studies and given the globalization of the world economy, a high level of competence in English is viewed as a pre-requisite for all business students in the 21st century (Louhiala-Salminen and Kankaanranta 2012). Regarding accounting education, the Accounting Education Curriculum (established by the International Federation of Accountants, IFAC) claims that mastery of English should be regarded as 'general knowledge' that all students should develop (Diaconu et al. 2011).

Mixing both importance of English skills and specific communication skills makes them even more critical. The premise is simple, written communications are more formal and the need to be constructed in grammatically correct form in proper English and clearly understood. The proliferation of social media, including texting and, to a considerable extent email communication, has caused students to be very lax in using proper grammar, including treat emojis as acceptable business communication. This may work in some industries but, for the most part businesspeople in any industry expect clear, concise, professional, easy to read and informative messages using appropriate formality.

Additionally, this led to the skills for:

- Making presentations: Many decisions are based on project-based efforts that require a substantial amount of objective and subjective data analysis. Presentations are effective mechanisms for providing management with the ability to make decisions without being forced to pour through the myriad of details necessary to make the decision. Presenting is no longer an optional business management activity especially for accountants. Presentation style is very personal and a professional's ability to present improves over time. HEIs need to increase their efforts to allow their students to graduate with strong presentation skills with the focus not being on the materials themselves but how well they are presented and what level of informing, persuading, and decisioning they achieved.

- Management: As noted previously the ability to obtain and summarize data has become much easier with the advent of advanced software functionality. Consequently, this ability is assumed to be present allowing businesses to expect more advanced management skills from new graduates. Management skills such as critical thinking and professional skepticism are expected from graduates right out of the box. In addition, accountants are viewed as potential future managers in financial and operational roles so they are expected to have inherent leadership skills that will become important later in their career as their responsibilities increase.

- Critical Thinking: Critical thinking is especially helpful in a business setting where dynamism is the order of the day. There are always many solutions to issues at hand and critical thinking helps a professional surface the best solutions by thinking through problems and being willing to consider many strategies before deciding on the proper course of action. Nothing is taken for granted when presented with a problem. Accounting professionals are accustomed to correlating information attained throughout the company and even the economy to identify threats and opportunities.

- Professional Skepticism: Perhaps one of the most well-known soft skills attributed to accountants and auditors is professional skepticism. In auditing the concept is well ingrained into the auditor's day to day operations but also is a skill that internal financial and management accountants must possess. Accountants and auditors, by the nature of the work and the standards they follow, are more skeptical than others because they see more situations where business partners may want to slant the presentation of information to support their position. It is a skill that can be improved upon through experience, but business people do expect newly graduated accountants to be adapted in this regard. The perception is important, and it has its roots in understanding that professional skepticism comes from a position of knowledge and analysis ability. In many ways one of the pillars of skills necessary to help ensure that financial reporting is accurate and properly depicts the results of a company. In the application of this skill, we tend to view professional skepticism as an attribute that people with good street smarts can learn to implement in a business framework. In this world of the proliferation of information, whether the information be accurate or not, in the many aspects of our expanding e-World it is important that logic be applied to data and data driven conclusions.

Professional skepticism is considered a soft skill because the effect challenges the veracity of someone's assertion; so, diplomacy must be exercised as well as being open to discussing the issue in more depth. It is one of the challenging skills to expect from a recent college graduate because students are more likely than now fed the educational truth in their studies. For graduates to be effective using professional correlate disparate pieces of data to connect the dots and ensure the information is providing a consistent response. Professional skepticism is the practical application of critical thinking. and is a high order skill that encompasses different attributes such as analysis, synthesis, and logic, The appropriate use of professional skepticism leads to a proper evaluation for a critical decision.

- Willingness to Ask Questions: The confidence to ask questions demonstrates a questioning mind that helps to identify someone that seeks to learn, grow, and have an open mind to developing solutions. Confidence is critical for future leaders and when considered with the associated learning of profound issues, the ability to question is a skill that business want to foster. The ability can help identify those that are open to innovative ideas and is necessary in business's changing risks and opportunities.

- Time Management Skills: Many new staff have difficulty managing their time and may have little experience in doing so. However, students that are competent in time management may point to employment experience while attending college or participation in extracurricular activities such as student chapters in professional organizations and athletics Such students have already begun to master the skill of juggling conflicting priorities. Time management is critical for future leaders dealing with satisfying many internal and external constituents and stakeholders that are all subject to well-defined timelines and deadlines.

Thus, in perspective of above-mentioned skills the current methodology of higher education is not sufficient to prepare students for the profession due to advancements and the ever-increasing reliance on technologies. The ubiquitous availability of information and the automation of certain tasks once performed by accountants has made certain skills such as retention of discipline content and mechanical tasks become less relevant. They must be kept on base level but the accounting programs should generally defocus on technical knowledge.

The adoption of the any competency-based approach will prepare students with the desirable skills for the current workforce. Accounting program directors can holistically change the entire curriculum where the focus of each course will be on the professional skills and the accounting technical knowledge will be secondary. However, the implementation of any approach may be difficult and even impossible. In one or other way this single course may be a viable approach.

6. Conclusion

The study makes contribution to the better perception of new requirements and future profile of the accounting professional, especially in Bulgarian context. The results challenge the accounting teaching in competence-based manner and in transversal skills. Topic received inadequate attention in HEIs in Bulgaria. According to the results, technical competencies and professional skills signaled by organizations through job advertisements are in line with those recommended by the IFAC. Thus, IESs 2 and 3 are possible alternative for the structure of accounting programs. However, this should be done according to the regional and local needs. And HEIs should implement in a timely manner in accounting courses and curricula the market demands. The results showed that as supplement to technical competencies, employers demand such that go beyond them. Accounting professional should possess properties as teamwork, collaboration and cooperation, critical thinking and time management.

First limitation is that it is a preliminary research which do not allow constructive and generalized conclusions. Although still the paper does not intend to reach such. Second limitation refers to the subjectivity of interpretations of the results.

A possible future research venue is to examine correlations between competencies and job performance of accountants. This would improve understanding of expectation and performance gaps. In addition, it opens up search space to scrutinize accounting curricula and the adequacy of education from employers demands and educational standards.

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Appendix 1 Importance of technical skills by employer's job advertisements (% of total number for the group)

C4.1	Explain national taxation compliance and filing requirements	63,31%
C6.4	Analyze the components of internal control related to financial reporting.	58,28%
C10.3	Explain the different types of market structures, including perfect competition, monopolistic competition, monopoly, and oligopoly.	57,69%
C8.4	Use ICT to analyze data and information.	54,88%
C9.1	Describe the environment in which an organization operates, including the primary economic, legal, regulatory, political, technological, social, and cultural aspects.	52,08%
C7.2	Explain the laws and regulations applicable to the environment in which professional accountants operate	48,91%

C2.1	Prepare data and information to support management decision making on topics including planning and budgeting, cost management, quality control, performance measurement, and comparative analysis.	47.96%
C3.2	Analyze an organization's cash flow and working capital requirements.	41,24%
C9.2	Analyze aspects of the global environment that affect international trade and finance	37,50%
C11.3	Analyze the external and internal factors that may influence the strategy of an organization.	33,82%
C6.5	Analyze the adequacy of systems, processes and controls for collecting, generating, storing, accessing, using, or sharing data and information	33,58%
C2.4	Analyze data and information to support management decision making.	31,57%
C1.2	Apply International Financial Reporting Standards (IFRSs) or other relevant standards to transactions and other events.	28,93%
C11.4	Explain the processes that may be used to develop and implement the strategy of an organization.	27,21%
C7.1	Explain the laws and regulations that govern the different forms of legal entities	26,94%
C10.2	Describe the effect of changes in macroeconomic indicators on business activity	26,92%
C5.1	Describe the objectives and phases involved in performing an audit of financial statements.	26,32%
C1.4	Prepare financial statements, including consolidated financial statements, in accordance with IFRSs or other relevant standards.	26,09%
C5.2	Apply International Standards on Auditing or other relevant auditing standards, laws, and regulations applicable to an audit of financial statements	25,76%
C3.1	Compare the various sources of financing available to an organization, including bank financing, financial instruments, and bond, equity and treasury markets.	25,35%
C7.3	Apply data protection and privacy regulations when collecting, generating, storing, accessing, using or sharing data and information.	24,15%
C11.2	Explain the purpose and importance of different types of functional and operational areas within organizations	23,53%
C8.3	Explain how ICT supports the identification, reporting, and management of risk in an organization.	19,23%
C1.5	Interpret financial statements and related disclosures.	18,62%
C1.6	Interpret reports that include non-financial data and information	16,82%
C4.2	Prepare direct and indirect tax calculations for individuals and organizations.	16,69%
C10.1	Describe the fundamental principles of microeconomics and macroeconomics.	15,38%
C5.7	Explain the key elements of assurance engagements and applicable standards that are relevant to such engagements.	14,96%

C3.3	Analyze the current and future financial position of an organization, using techniques including ratio analysis, trend analysis, and cash flow analysis.	14,49%
C4.4	Explain the differences between tax planning, tax avoidance, and tax evasion	13,54%
C11.5	Explain how theories of organizational behavior may be used to enhance the performance of the individual, team, and the organization.	12,50%
C9.3	Identify the features of globalization, including the role of multinationals and emerging markets	10,42%
C1.3	Evaluate the appropriateness of accounting policies used to prepare financial statements.	9,55%
C5.3	Assess the risks of material misstatement in the financial statements and consider the impact on the audit strategy.	8,86%
C2.2	Apply techniques to support management decision making, including product costing, variance analysis, inventory management, and budgeting and forecasting	8,61%
C5.6	Conclude whether sufficient and appropriate audit evidence has been obtained	8,59%
C2.3	Apply appropriate quantitative techniques to analyze cost behavior and the drivers of costs	8,24%
C5.5	Identify relevant audit evidence, including contradictory evidence, to inform judgments, make decisions, and reach well-reasoned conclusions	8,03%
C3.6	Explain income, asset-based, and market valuation approaches used for investment decisions, business planning, and long-term financial management.	7,71%
C5.4	Apply quantitative methods that are used in audit engagements	7,48%
C8.6	Apply ICT to enhance the efficiency and effectiveness of an organization's systems.	6,96%
C8.2	Explain how ICT supports data analysis and decision making.	6,67%
C4.3	Analyze the taxation issues associated with non-complex international transactions	6,46%
C8.7	Analyze the adequacy of ICT processes and controls.	6,09%
C6.3	Analyze an organization's risks and opportunities using a risk management framework.	6,07%
C3.5	Apply capital budgeting techniques in the evaluation of capital investment decisions.	5,96%
C3.4	Evaluate the appropriateness of the components used to calculate an organization's cost of capital.	5,26%
C2.5	Evaluate the performance of products and business segments	3,61%
C11.1	Explain the various ways that organizations may be designed and structured.	2,94%
C6.1	Explain the principles of good governance, including the rights and responsibilities of owners, investors, and those charged with governance; and the role of stakeholders in governance, disclosure, and transparency requirements.	2,51%
C8.8	Identify improvements to ICT processes and controls	2,42%
C8.5	Use ICT to enhance the efficiency and effectiveness of communication	2,13%
C6.2	Analyze the components of an organization's governance	2,07%

	framework.	
C8.1	Explain the impact of Information and Communications Technologies (ICT) developments on an organization's environment and business model.	1,64%
C1.1	Apply accounting principles to transactions and other events.	0,00%

Appendix 2 Importance of professional skills by employer's job advertisements ((% of total number for the group)

S5.1	English skills	77,95%
S4.1	Undertake assignments in accordance with established practices to meet prescribed deadlines	47,83%
S2.1	Demonstrate collaboration, cooperation, and teamwork when working towards organizational goals.	34,60%
S2.2	Communicate clearly and concisely when presenting, discussing, and reporting in formal and informal situations	34,07%
S4.2	Review own work and that of others to determine whether it complies with the organization's quality standards	28,55%
S3.3	Manage time and resources to achieve professional commitments.	26,55%
S3.2	Set high personal standards of performance and monitor through reflective activity and feedback from others.	25,73%
S1.5	Respond effectively to changing circumstances or new information to solve problems, inform judgments, make decisions, and reach well-reasoned conclusions	24,24%
S1.4	Recommend solutions to unstructured, multi-faceted problems.	23,02%
S1.1	Evaluate data and information from a variety of sources and perspectives through research, integration, and analysis.	22,14%
S5.2	Other foreign language skills	22,05%
S1.2	Apply critical thinking skills to solve problems, inform judgments, make decisions, and reach well-reasoned conclusions.	21,33%
S4.5	Apply leadership skills to influence others to work towards organizational goals	14,58%
S2.6	Apply consultative skills to minimize or resolve conflict, solve problems, and maximize opportunities	14,37%
S3.4	Anticipate challenges and plan potential solutions	13,24%
S3.6	Identify the potential impact of personal and organizational bias.	12,43%
S3.1	Demonstrate a commitment to lifelong learning.	11,43%
S3.5	Apply an open mind to new opportunities.	10,62%
S1.3	Identify when it is appropriate to consult with specialists.	9,28%
S2.4	Apply active listening and effective interviewing techniques.	7,60%
S4.3	Apply people management skills to motivate and develop others.	6,02%
S2.7	Present ideas and influence others to provide support and commitment.	4,41%
S2.5	Apply negotiation skills to reach solutions and agreements	3,73%
S4.4	Apply delegation skills to deliver assignments	3,01%

S2.3	Demonstrate awareness of cultural and language differences in all communication.	1,22%

Practical approach for modifying existing geocoding system from equal angular to equal area

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Abstract. Geocoding systems are essential for the rapid processing of large volumes of spatial data. There are numerous geocoding systems, each of which divides the space into subspaces with a unique geometric shape and employs a different approach of creating its unique identifier - the geocode. The article's main goal is to demonstrate how existing equal angular geocoding system can be modified to become equal areas geocoding system. The research focuses on the main characteristics of equal angular geocoding systems. Although there are many geocoding systems available today, the study is limited to Geohash, one of the equal angular geocoding systems widely used in practice. We propose a novel approach called Hashgeo that has many practical implications. Many advantages (practical implications) of using cells with equal area have been identified, including: facilitating data comparison between cells of different latitudes, simplifying the process of visualizing data on an online map when creating so-called "heat maps", facilitating statistical analysis of data, preserving the "units per area" indicator when summarizing and aggregating data in a larger scale from data for smaller cells and others. The areas of the spherical segments and the cells within them are calculated using a suitable derived formula.

Key words: geocoding, geographic information systems, equal area geocoding, Geohash, Hashgeo.
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1. Introduction

Many devices support global or regional navigation satellite systems, like GPS (USA), Galileo (EU), BeiDou (China), GLONASS (RF), QZSS (Japan), or NavIC (India), and can easily provide geolocation coordinates. Automatic coordinate acquisition makes it easier to measure a variety of parameters, such as motion, speed, atmospheric parameters, etc., and it makes it simple to quickly link events to exact locations. The volume of data related to geographical locations is constantly growing, owing to the widespread use of smartphones and other mobile devices with built-in GPS receivers, as well as the prevalence of vehicles with automatic navigation, drones, IoT devices, and other technologies. GPS navigation, geotagging, geomarketing, and geofencing are becoming increasingly popular. These tools, devices, and services generate massive amounts of data that must be efficiently and timely processed in order to improve decision support.

Efficient processing of rapidly changing large volumes of geospatial data is a complex scientific challenge that necessitates solutions that are in line with current information technology. It necessitates a reconsideration of how data is transformed, stored, and processed in order to effectively meet specific needs. Geocoding systems are critical in the analysis of large amounts of geospatial data.

Different geocoding systems divide space into subspaces with different geometric shapes (triangles, quadrilaterals, or hexagons are the most common). Moreover, various systems are employed to generate distinct identifiers, commonly known as geocodes. The depth of recursive space subdivision, space properties (such as area and dimensions), the number of subspaces into which a space is directly divided, and other factors are also different among these systems. These distinctions have implications for the efficiency of geocode storage, processing, and transmission, as well as the convenience of data aggregation, statistical processing and analysis, visualization, and modelling.

Geocoding systems are categorized based on distinct characteristics, with recent years witnessing the establishment of Discrete Global Grid Systems (DGGS) as an abstract concept. DGGS adheres to specific rules

during recursive tessellation, a process involving the division or filling of space using geometric figures, typically identical regular polygons. This method, often referred to as tessellation, aims to eliminate overlaps and empty spaces (Okabe 2017; Hrach 2023).

In DGGS development, a foundational requirement involves using a geometric body with uniform walls as the basis for projecting geographic maps to generate the grid. Recursive tessellation then structures spaces and their corresponding subspaces hierarchically. Each space can, in turn, act as a subspace within a higher-level space. Essential operations within this geocoding approach include establishing relationships between spaces and subspaces, as well as determining nearest neighbouring spaces.

The "Goodchild Criteria," introduced in 1990, play a pivotal role in DGGS evolution (Kimerling et al. 1999; Goodchild & Kimerling 2002; Gibb 2016; Wang et al. 2021). Currently, the Open Geospatial Consortium (OGC) and working groups within the International Organization for Standardization are significantly involved in advancing DGGS (Gibb 2022).

2. Literature review

Geocoding is a fundamental technology for efficiently indexing spatial data. Geocoding, in its broadest sense, includes three primary components. It begins with the input data on which the encoding process is performed. Second, it includes the method (algorithm) for performing the encoding. Finally, it refers to the data structure of the resulting code, which can be numerical values for rapid automated processing or alphanumeric strings for simple human use in everyday life.

Geographic coordinates, usually latitude and longitude, are used as the input data in most geocoding systems. Classical address geocoding or geoparsing is frequently required before working with building addresses. The process of translating geographic names into geographic coordinates is known as geoparsing (Aldana-Bobadilla et al. 2020; Tateosian et al. 2017; Avvenuti et al. 2018; Fernandes et al. 2021). It is important to consider that geoparsing works with unstructured data, which is frequently textual, whereas geocoding primarily works with structured information (Horak et al. 2011). This distinction highlights the possibility of mistakes that come with using language as humans (Liu et al. 2022).

In a broader sense, a "geocode" is a geographic code, typically alphanumeric, that uniquely and unambiguously identifies a specific geographic location. The geographical location may or may not have a predetermined area, dimensions, or shape. Geocodes intended for human use in everyday life should be concise and simple to understand.

Today, geocodes are widely used in a variety of applications, including vehicle registration numbers that indicate the city of registration, postal codes, and addresses. Geocoding is the process of working with various types of geocodes. It can occur in two directions: forward and reverse geocoding. Forward geocoding, for example, determines that the city of Varna corresponds to postal code 9000, whereas reverse geocoding associates postal code 9000 with the city of Varna.

Within a more restricted context, certain sources employ the word "geocoding" interchangeably with the more focused idea of "address geocoding." We believe that this usage is deceptive and may lead to a misunderstanding of terminology. Geocoding, for example, is described as follows in Google's developer documentation (Google 2023): "The process of converting addresses (e.g., '1600 Amphitheater Parkway, Mountain View, CA') into geographic coordinates (e.g., latitude 37,423021 and longitude -122,083739) that can be used to place markers or positions on a map." The process of translating geographic coordinates into an address that can be read by humans is known as reverse geocoding." Here, "geocoding" refers only to using building addresses and Google Maps; it does not refer to the wider definition of "geocoding."

"Geocoding is the process of transforming a description of a location - such as a pair of coordinates, an address, or a name of a place - to a location on the earth's surface" says Environmental Systems Research Institute, Inc. (ESRI) documentation for ArcGIS Desktop. The locations that result are represented as geographic features with attributes that can be used for mapping and spatial analysis" (ArcMap 2023). In a nutshell, "geocoding" is "the assignment of a code, typically numerical, to a geographic location" (Krieger et al. 2004). In summary, geocoding is a programming technique that converts two sets of geographical coordinates into a short character string.

Geographic Information Systems (GIS) specify locations (Vasilev et al. 2022) in a variety of formats. The most basic format is Degrees, Minutes, Seconds (DMS): Latitude and longitude are expressed as three integers in degrees, minutes, and seconds, with the latter having a fractional part. One nautical mile (1 NM or 1852 meters) is equivalent to one minute of terrestrial meridian, and one second from the meridian is approximately 30.87 meters. These can be represented in two ways: latitude followed by longitude (navigation system) and longitude followed by latitude (Cartesian system).

Other formats are as follows WKT (Well-Known Text): A proposal by the Open Geospatial Consortium that has been incorporated into international standards (ISO 2016; ISO 2019); KML/KMZ (Keyhole Markup Language/Keyhole Markup Zipped): Initially developed for Google Earth and subsequently specified by the OGC (OGC 2015; Google 2023); GeoJSON: Defined in RFC 7946 by the IETF (IETF 2016); GPX (GPS Exchange Format): Commonly used in Garmin devices (Topografix 2004); MGRS: Employed in NATO; Plus Codes: Proposed and used by Google; Geohash: Proposed by G. Niemeyer from Canonical Ltd. (Ubuntu). Furthermore, data can be specified in universal unstructured formats, such as CSV (defined by IETF) (IETF 2005) or TSV (specified by IANA) (IANA 1993).

A practical and open-source tool for converting between different file formats is ogr2ogr (https://gdal.org/programs/ogr2ogr.html), developed by the GDAL (Geospatial Data Abstraction Library) project, with funding from the NumFOCUS organization. Convenience, performance, legacy considerations, and other factors are important to consider when selecting a format. A qualitative comparison of a few location specification formats used in GIS is given in Table 1, considering factors like size, footprint, and decoding ease.

Table 1.

Comparison of popular geolocation formats used in GIS

Format	Size	Footprint	Ease of Decoding
DMS	Expressed in degrees (°), minutes ('), and seconds (")	Can be relatively large in terms of characters, when specifying coordinates with high precision.	Human-readable and understandable for people familiar with geographic coordinates.
WKT	Variable, but typically concise for simple geometries	Compact for representing basic geometries	Readable and relatively easy for humans to understand. Widely supported by GIS software for parsing.
KML/ KMZ	XML-based, can vary widely depending on the complexity of the data	XML is verbose and can result in larger file sizes for complex data	KML is human-readable and can be understood visually. KMZ is a compressed format that can be easily opened in compatible software.
GeoJSON	JSON-based, compact for representing basic geometries	Compact and efficient for web-based applications	Human-readable and easy for software to parse, making it popular for web mapping
GPX	XML-based, variable depending on the number of waypoints, tracks, and routes	XML format can be verbose for large datasets	Human-readable XML structure, widely used for GPS data interchange
MGRS	Typically a combination of UTM coordinates and grid zone designators	Larger footprint in terms of characters compared to latitude and longitude	Requires knowledge of MGRS grid system and may involve parsing algorithms
Plus Codes	compact alphanumeric code	compact and designed for easy communication	Designed for simplicity and user-friendliness. Specialized decoding tools and services are available.
Geohash	Variable length depending on desired precision	Compact for representing locations but can get longer with higher precision	Requires specialized decoding algorithms

Source: Own elaboration

The Geohash geocoding system converts a latitude and longitude pair into a single alphanumeric character string to encode geographic coordinates. Each character in the Geohash string after that improves the accuracy of the location. This Geohash string can be used as a unique identifier for spatial indexing and quick lookups. There is also an online system for converting geographic coordinates into a Geohash code (as shown in fig. 1).

Geohash encoding is currently implemented in various relational database management systems and NoSQL type systems, including PostgreSQL (PostGIS 2023), MySQL (MySQL 2023), Redis (Redis 2023-b), MongoDB (MongoDB 2023), Lucene (Apache Software Foundation 2016), Elasticsearch (Elasticsearch 2023), Solr (Smiley et al. 2015), Cassandra (Shah & Chaudhary 2018), Memcached (Ni et al. 2020), CouchBase (Couchbase 2023), HBase (He et al. 2017; Van & Takasu 2018), DynamoDB (Jawarneh et al. 2020), and others.

Numerical values on the map are divided in half during the division process. For example, averaging (0 + 90) and dividing by 2 yields the latitude of 45° for the first horizontal line. This method of dividing the map into separate cells is based on simple arithmetic operations and yields cells with different areas and sizes. A single cell has the capacity to divide multiple times, giving rise to as many as 32 smaller cells (fig. 2). The division pattern of Geohash coding alternates, which makes it unique. The following division consists of 8 rows and 4 columns if a division of 4 rows and 8 columns is utilized.

Figure 1. Geocoding online service geohash.org with a Geohash code in the URL
Source: http://geohash.org/ry7cx4tp95

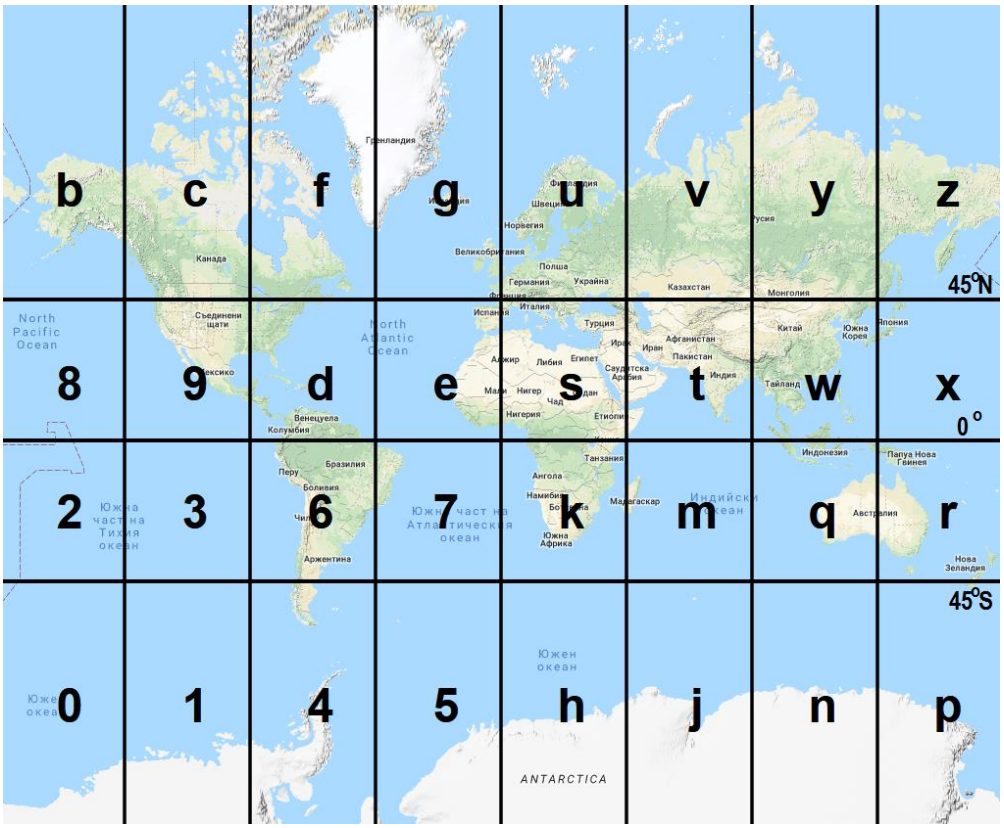

Figure 2. The map of the world divided on 32 cells at the Geohash's first level of precision
Source: Petrov et al. 2018

Each cell division into smaller cells adds a new character to the Geohash string. The accuracy of the location is directly impacted by the string's character count. The effect of removing characters from the end of the string is the same as removing digits from the end of the latitude and longitude numbers. The use of a Geohash code allows for the quick retrieval of objects that are nearby. These objects typically share common Geohash string prefixes, allowing for efficient querying via SQL statements. Consider the following query: "SELECT * FROM table WHERE geohash LIKE 'sxevg%';" retrieves objects located in the city of Varna (without peripheral districts), and the request: "SELECT * FROM table WHERE geohash LIKE 'sxevg3%';" extracts objects located around the UE-Varna building.

Following the widespread adoption of Geohash coding, information surfaced about the Quadkeys system (https://learn.microsoft.com/en-us/bingmaps/articles/bing-maps-tile-system), which operates in a similar manner (fig. 3). However, based on the algorithm description, it appears to be more closely related to the Quadtree algorithm (Samet 1984; Spann & Wilson 1985; Tobler & Chen 1986; Shaffer & Samet 1987).

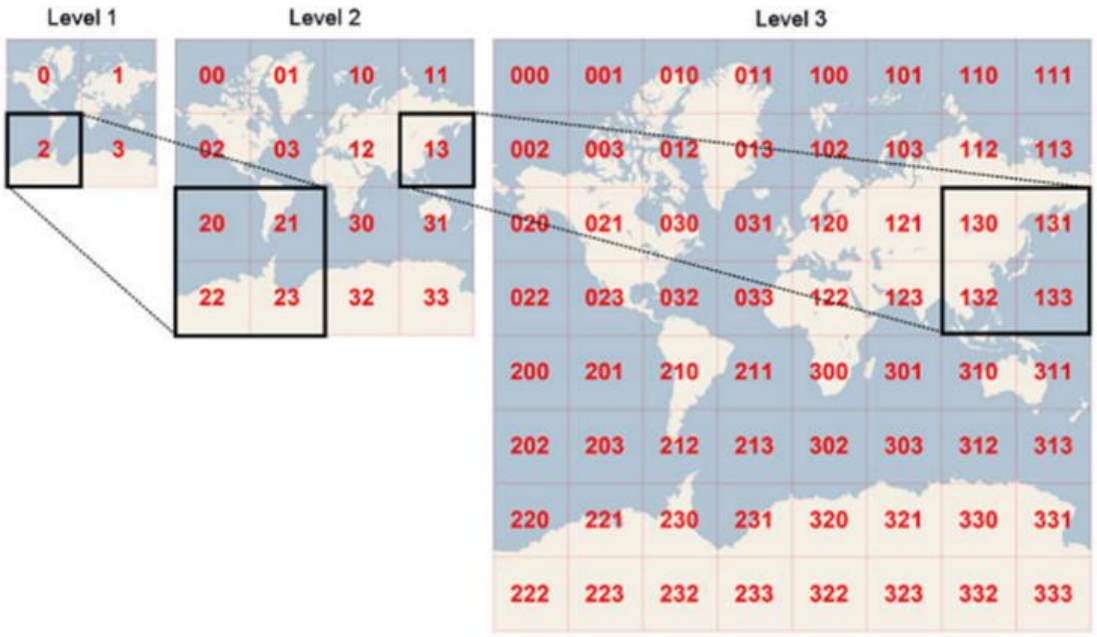

Figure 3. Visual representation of the tessellation process with the Quadkeys system
Source: Schwartz 2022

The primary similarity to Geohash coding is the practical alternation of latitude and longitude bits as well as z-curve traversal. The key difference between Geohash and Quadkeys geocode is the use of Base-4 for the geocode, specifically the digits "0123", and this system is primarily intended for specialists to use.

Furthermore, a similar system to Bing Maps' Quadkeys has been developed for Google Maps, known as Open Location Code/Plus Codes (OLC/PC). OLC/PC is a geocoding system that is based on quadrilateral spaces (Cantarero et al. 2020; Mai et al. 2022). The grid is divided into 9 rows and 18 columns at the first level, with each cell measuring 20 by 20 degrees. The following four recursive divisions of each space are 20 by 20 subspaces, i.e. the spaces on the individual levels have dimensions of 20°x20°, 1°x1°, 0,05°x0,05°, 0,0025°x0,0025°, and 0,000125°x0,000125°, with the areas of the spaces from one level located at different latitudes not being equal. The dimensions of the spaces near the equator are approximately (assuming that 1° = 111,321 km at the equator) 2226x2226 km, 111x111 km, 5,6x5,6 km, 278x278 m, and 13,9x13,9 km, respectively. The following divisions are 5 by 4 subspaces (dimensions near the equator: 3,5x2,8 m, 87x56 cm, and so on).

The location is encoded in an alphanumeric string using twenty characters from the set "23456789CFGHJMPQRVWX". The letters are all capitalized. To avoid confusion or mispronunciation, numbers and letters that are easily confused with others are excluded, as in other systems. The geocode begins with four pairs of symbols, the first of which represents latitude and the second of which represents longitude. Similar to how separators are used when writing telephone numbers, the "+" symbol is placed after the first eight characters to aid in the visual perception of the separate parts of the geocode. The "+" symbol is followed by another pair, followed by a series of only one symbol each, corresponding to a grid of 5 by 4 subspaces (Rinckes & Bunge 2022). This geocode has an interesting feature in that it can be shortened when combined with a predefined reference location. This makes the code section shorter, more usable, and easier to remember. In the case of short codes, the first 2 to 6 characters are removed, and the symbol "+" must be included; the following characters cannot be removed. A country, city, or other location name should also be included.

Since 2018, the organization "Addressing the Unaddressed" (https://www.addressingtheunaddressed.org/) has used OLC/PC in the placement of signs with building addresses in India, particularly in Calcutta (Wiebe, 2018; Mason, 2020; Mask, 2020). Although OLC/PC is licensed as free software, it can only be used in the online mapping service Google Maps.

Combining different map projections and grids can be used in a number of ways to translate a three-dimensional location on a spherical body to a two-dimensional point on a map. For instance, the Mercator projection is frequently used in navigation along with a roughly square grid. In addition to the obvious benefit of making course and other angles easy to determine, this projection has the serious drawback of significantly distorting the figures' sizes as they approach the poles.

On a regional map covering a country or a water basin, this distortion is usually not visible and therefore not necessary. When the entire Earth is covered, these distortions are easily noticeable. For this reason, Google Maps, a well-known online map service, has been displaying a 3D globe at large scale instead of a small-scale Mercator projection map since 2018. In order to address these issues, data analysis calls for the application of a set of coefficients connected to particular grid subspaces.

A geocode can be linked to a wide variety of data in the database, and all data associated with a given geocode that corresponds to a specific geographic space or neighbouring spaces can then be quickly retrieved. Small objects can be associated with larger spaces where they fit perfectly, just as large objects can be associated with several smaller spaces where they fit perfectly.

For ease of comparison, it is crucial that the spaces have the same area for multiple applications. For instance, there is a significant ease of calculation for the "number of objects per unit area" indicator, which forms the foundation of the so-called "heat maps". Owing to the peculiarities of the reference geometric bodies - the sphere, ellipsoid, and flattened ellipsoid, that are used to approximate the precise shape of the Earth (the geoid), it is difficult to obtain spaces in the grid that have the same dimensions and proper shape.

The grid is frequently formed during the rasterization process by spherical arcs spaced at equal angular distances in latitude and longitude. This causes disproportions as latitude increases - the spaces, which are square or rectangular at the equator, gradually change to trapezoidal in the middle latitudes and triangular at the poles, where all the meridians meet.

In contrast to the square, rectangle, or trapezoid, which have four neighbours on the sides and four on the vertices, the pole triangle has three neighbours on the sides, two neighbours on the vertices facing the equator, and numerous neighbours on the vertex at the pole. Due to these complications, some systems (such as Redis or Quadkeys) limit the latitude to about 85 degrees, avoiding the triangular shape of cells near the poles.

3. State of the problem

One major problem with current equiangular tessellation methods is the accuracy of a cell's predetermined height, measured in centimetres, meters, or kilometres, in relation to its width. If the Earth is a sphere, for example, the width in meters at the bottom edge of the cell "9" covering 45°x45° from the equator equals the height, but it is less than the width at the top edge in Geohash coding.

This discrepancy arises because the meridians converge at the poles, causing the latitude in meters at the top of cell "u" (and all cells on the same row) to approach zero. Assuming the Earth is a sphere with a radius of 6371 km, with satisfactory accuracy, we can state that: 1° at the equator equals 111,2 km for both the height and width of a cell; 1° along the 22,5° parallel is 102,5 km (2 * π * [6371 km * cos(22,5°)] / 360°) for cell width; at 45° – 78,6 km, and at 67.5° – 43,5 km for cell width.

With this data, the bottom and height of the "9" cell are 5003,8 km (45° * 111,2 km). However, the width of the top side of the "9" cell is 3538,2 km (45° * 78,6 km).

The width of the bottom of the "c" cell matches the width of the top side of the "9" cell - also 3538,2 km. The height is the same as the height of cell "9" - 5003,8 km, nonetheless, the span of the top side of cell "c" is zero. In contrast to the "9" cell, which is a spherical quadrilateral (with four 90° angles), a "c" cell is a spherical triangle (with two 90° angles at the base and a third 45° angle at the apex). This may not be visible on maps using projections such as the Google Web Mercator.

While dividing the map into subspaces by halving numbers involves simple arithmetic operations, each cell at precision level one has 45° width and 45° height dimensions. However, the lengths of the horizontal sides of cells in different rows are not equal when measured in meters, kilometres, miles, and so on.

Not only are the sides unequal, but the cells are also different in size. The "9" cell, for example, has a surface area of approximately 22,5 million square kilometres, whereas the "c" cell has a surface area of only 9,3 million square kilometres. According to the calculation formulas provided by (Donaldson & Siegel 2001), the area of the "9" cell is approximately 2,4 times that of the "c" cell (fig. 4, fig. 5).

Figure 4. The surface areas disproportion in cells located on latitudes 0°-45° and 45°-90°
Source: Petrov et al. 2018

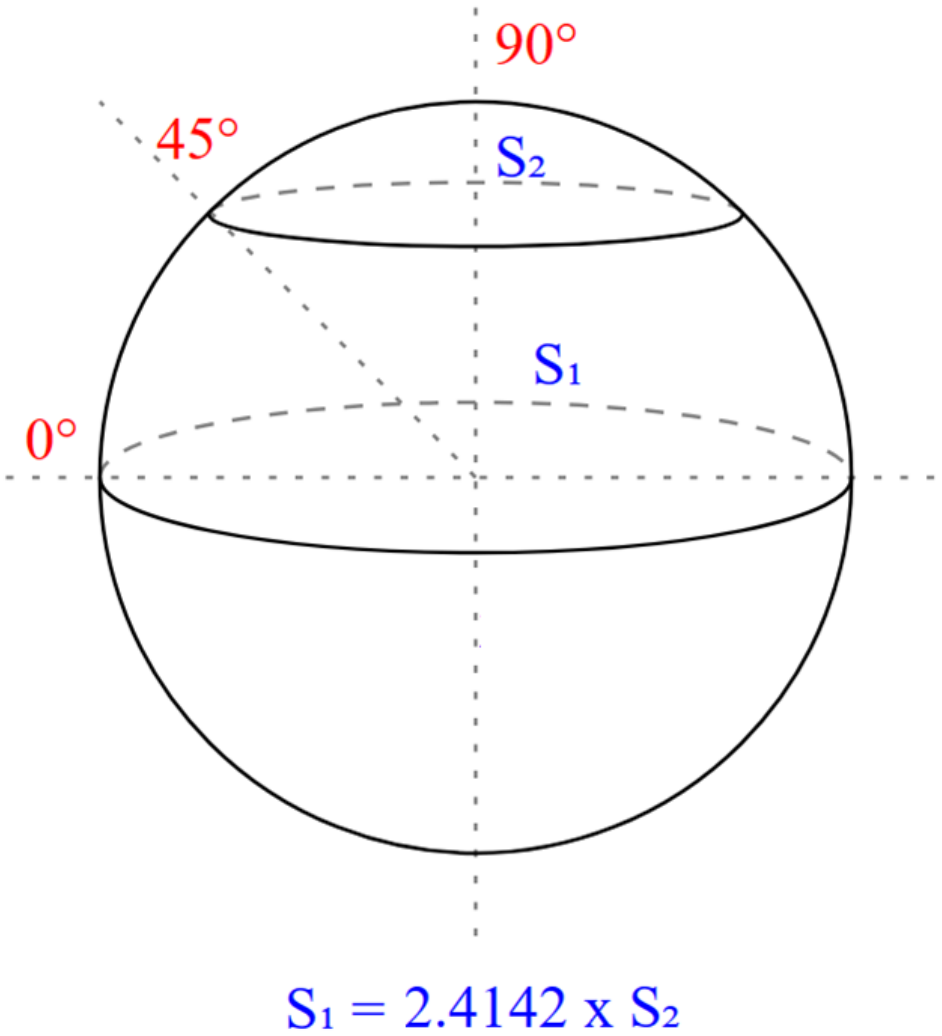

Figure 5. Difference in areas between spherical segments 0°-45° N. and 45°-90° N
Source: Own elaboration

Essentially, different rows of cells have different areas because latitude is represented by mechanically dividing angles into equal parts. As Figure 4 and 5 illustrates, this disparity is already noticeable in the northern hemisphere's original division.

The upper row's area accounts for approximately 29,3% of the total area of the northern hemisphere, while the lower row's area accounts for approximately 70,7% of the total area. Refer to (Weisstein 2022) for a detailed mathematical explanation of the formulas used in calculations. It is important to note that when using the traditional Mercator projection for navigation, this difference in area is visually inverted. While this projection distorts areas, it effectively maintains object angles.

The cells in the top row are actually spherical triangles, with vertical sides convergent at a single point at the top of the triangle. Furthermore, latitudes above 83° are not displayed in Figure 4 because doing so would cause the areas in the top row cells' visual representation to be even more distorted. The division is shown on a sphere in Figure 5, which makes the variations in areas clearly visible.

4. Study of the differences in the areas of cells of the same accuracy level in Geohash coding

In the calculations, we use the basic formula for the area of a spherical segment:

$A = 2 * \pi * r^2 * (1 - \sin(\text{latitude}))$,
where r is the radius of the Earth.

At precision level one (the first character of the Geohash code), every single cell in the bottom row is about 2,4 times bigger than every other cell in the top row. At the second level of accuracy (the first two characters of the Geohash code) the division is 8 rows by 4 columns, and when dividing each cell into 32 subspaces, this difference in areas between the cells of the second level of accuracy increases (fig. 6 and fig. 7). In fig. 6 the top eighth row of cells of the second precision level is not shown - i.e. above 84,4°. It is well known that the Mercator projection, as a result of the distortions, is not ideal for accurately representing geographical sizes and shapes, particularly in areas far from the equator. The areas surrounding the poles are infinitely stretched, resulting in exaggerated sizes and shapes. The poles themselves are depicted as lines when they are, in fact, points. The distortions are easily visible on fig.6.

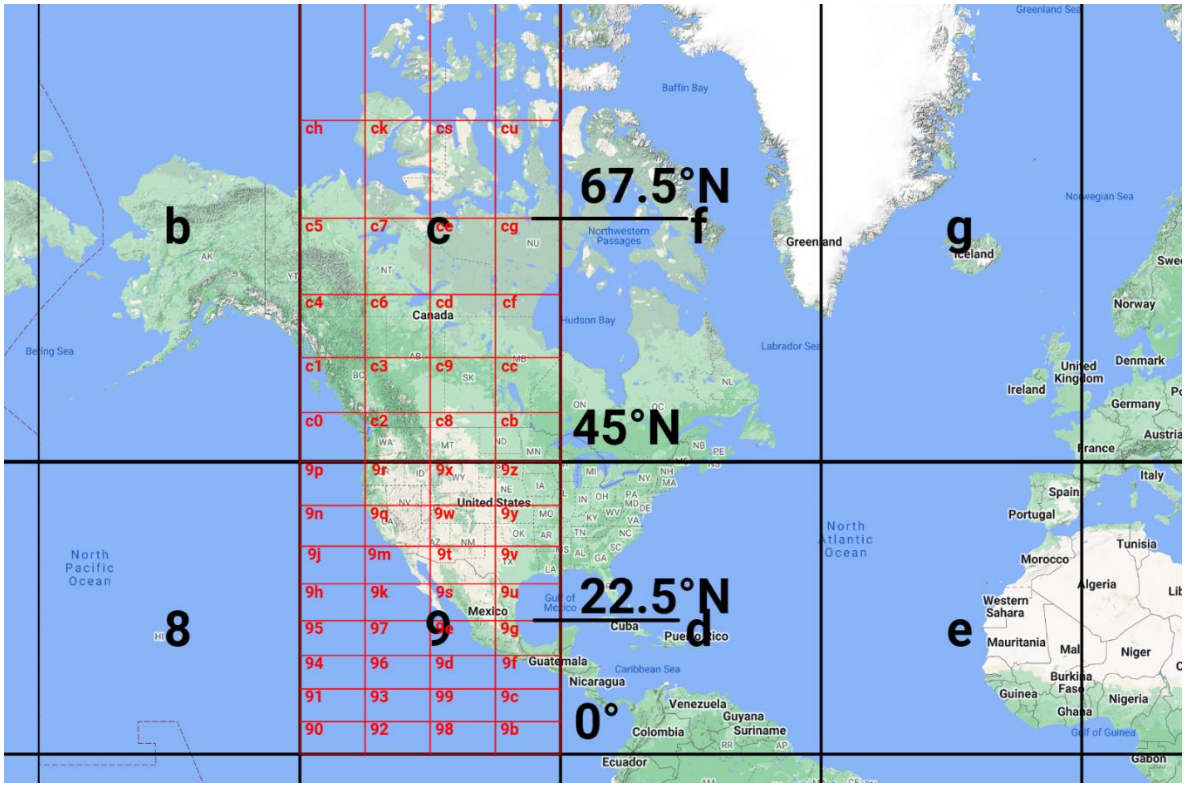

Figure 6. Subdivision of "9" and "c" cells at the second level of accuracy into 32 subcells
Source: Own elaboration, based on the Web Mercator projection from Google Maps

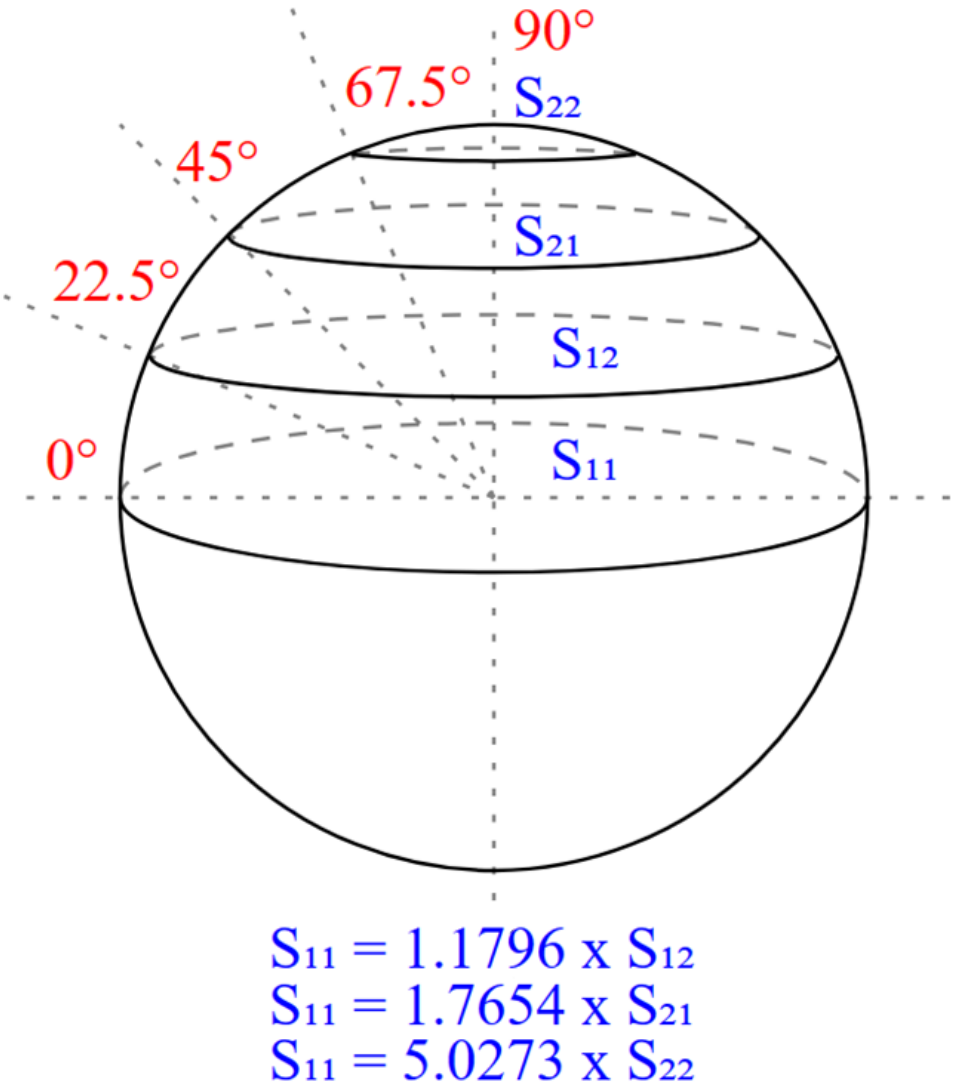

Figure 7. Area difference between spherical segments 0°-22.5° N, 22.5°-45° N, 45°-67.5° N and 67.5°-90° N
Source: Own elaboration

As a result of calculations for the individual spherical segments, the following is obtained:

Area_share_S_{11}(0°, 22.5°) ≈ 0.38268 ≈ 38.3%
Area_share _S_{12}(22.5°, 45°) ≈ 0.32442 ≈ 32.4%
Area_share _S_{21}(45°, 67.5°) ≈ 0.21677 ≈ 21.7%
Area_share _S_{21}(67.5°, 90°) ≈ 0.07612 ≈ 7.61%

The data are presented in fig. 8, from which we can conclude that in the equiangular tessellation, the closer the spherical segment is to the pole, the more its area decreases compared to the spherical segments that are located closer to the equator. For example, the area of the second accuracy level cell "9b" (the same area as "90", "92" and "98"), in the Pacific Ocean, is 2,9 times the area of the cell of the same precision level "ck" (the same area as "ch", "cs" and "cu") where the part of the Victoria Island, Canada is located.

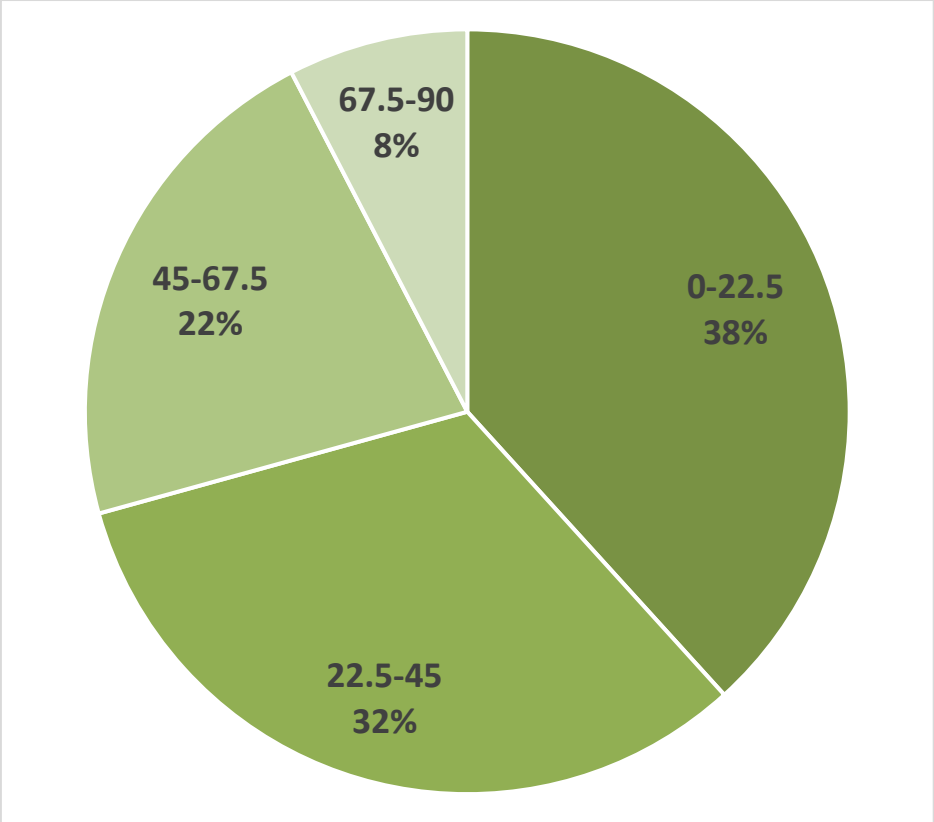

Figure 8. Shares of the areas of the four spherical segments 0°-22.5°, 22.5°-45°, 45°-67.5° and 67.5°-90° in the hemisphere in the equiangular tessellation
Source: Own elaboration

We can summarize that all subsequent divisions inherit disproportion in the surface areas of the parent cells and the tendency is for the disparity to increase. In Table 2 the areas of cells of different rows at the first and second level of accuracy in the Geohash code are presented.

Table 2. Bounding boxes around specific Geohash cells at first and second level of precision

Cell	West side	East side	South side	North side	Area of the cell (in thousands sq. km)
9	135° W	90° W	0°	45° N	22 542
c			45° N	90° N	9 337
9b	101,25° W	90° W	0°	5,63° N	781
9c			5,63° N	11,25° N	774
9f			11,25° N	16,88° N	759
9g			16,88° N	22,5° N	736
9u			22,5° N	28,13° N	707
9v			28,13° N	33,75° N	671
9y			33,75° N	39,38° N	628
9z			39,38° N	45° N	580
cb			45° N	50,63° N	525
cc			50,63° N	56,25° N	466
cf			56,25° N	61,88° N	402
cg			61,88° N	67,5° N	334
cu			67,5° N	73,13° N	263
cv			73,13° N	78,75° N	190
cy			78,75° N	84,38° N	115
cz			84,38° N	90° N	38

Source: Own elaboration

In Table 3, the ratio between the areas of cells, of the same level of accuracy, but located at different latitudes, is calculated. The base (unit) is the area of a cell bordering the equator at its lower end, i.e., latitude 0°. The next three cells border at their lower end the parallels of latitudes 22.5°, 45° and 67.5°. The last cell is bounded at its upper end by the parallel, which degenerates from a line or circle into a point, in latitude 90°. Calculations are made for different levels of accuracy - from 1 to 8.

Table 3. Ratio between the areas of cells located at different latitudes, when changing the level of accuracy

Level	Geohash codes of cells	Width in degrees	Height in degrees	Ratio
1	s u	45	45	1 0.414214
2	s0 sh u0 uh uz	11.25	5.625	1 0.90508 0.672369 0.337296 0.049127
3	s00 sh0 u00 uh0 uzz	1.40625	1.40625	1 0.919183 0.698429 0.371345 0.012272
4	s000 sh00 u000 uh00 uzzz	0.351563	0.175781	1 0.923293 0.706022 0.381266 0.001534
5	s0000 sh000 u0000 uh000 uzzzz	0.043945	0.043945	1 0.923733 0.706836 0.382329 0.000383
6	s00000 sh0000 u00000 uh0000 uzzzzz	0.010986	0.005493	1 0.923861 0.707073 0.382639 0.000048
7	s000000 sh00000 u000000 uh00000 uzzzzzz	0.001373	0.001373	1 0.923875 0.707098 0.382672 0.000012
8	s0000000 sh000000 u0000000 uh000000 uzzzzzzz	0.000343	0.000172	1 0.923879 0.707106 0.382682 0.000001

Source: Own elaboration

From Table 3 at the same level of accuracy the cells bordering the equator are many times larger than those bordering the pole. For example, at accuracy level 7, the difference is more than 83 thousand times, i.e., cell "s0000000" is about 83443 times larger in area than cell "uzzzzzz". At accuracy level 8, the difference is over 667 thousand times, at 9 – over 2,6 million times, at 10 – over 21 million times, at 11 – over 105 million times. For the cells bordering the 22,5°, 45°, and 67,5° parallels, the area differences gradually stabilize with increasing the accuracy.

As can be seen from the Table 2 and Table 3, the areas of cells of the same level of accuracy in Geohash coding vary widely, which creates great inconvenience in solving some applied problems.

Based on the provided data, switching to a grid of cells with equal areas, in our opinion, has the following main advantages:

1) Cells of equal area make it easier to compare data between cells located at different latitudes. For example, when studying population density, one can easily compare the density of this indicator in one cell with another cell, if the areas are of the same and previously known size.

2) Equal cell areas can simplify the process of data visualization on an online map when creating the so-called "heat map". If the cells are not the same in area, it may be more difficult to accurately represent the data on the map and may distort the visual representation of the data.

3) Cells with equal areas can facilitate statistical analysis of the data. For example, if the mean or median of a set of geospatial data is being calculated, cells of equal area help the statistical calculations to be more accurate.

4) Cells with equal areas can facilitate the implementation of algorithms that rely on equal areas. For example, some machine learning algorithms would perform better when the geospatial data is arranged in cells with equal areas.

5) When summarizing and aggregating data in a larger plan from data for smaller sized cells, the coefficient "indicator per unit area" is preserved - e.g., number of patients per square kilometre, number of vehicles per unit area, number of traffic accidents per unit area, etc.

5. Modified Geohash system with equal areas cells – Hashgeo system

Varying cell areas is sometimes inconvenient and undesirable, for example when analysing data by the number of objects per unit area. In these cases, the area of all cells of the same accuracy level must be the same. This is not achievable with the classical Geohash system, and therefore we propose to change it so that all cells of one accuracy level have the same area (Petrov et al. 2018). Additionally, in subsequent divisions, each cell of the next precision level has an area exactly 1/32 of the area of the parent cell.

To distinguish this system from the classical Geohash system, we use the name Hashgeo and the geocode is prepended with "#" (called hash, sharp, pound, hex, octothorp, etc.). For the conversion from geographic coordinates to Hashgeo to be as fast as possible, the calculations should be as simple as possible. The working algorithm is as follows:

1) There is no change in how the longitude of cell boundaries is calculated, i.e. vertical cell borders remain at the same longitude.

2) Calculation of latitude of cell borders is changed. In order to keep the area equal, a more complicated formula must be applied instead of splitting into equal angular portions. We obtained the following formula after transforming the spherical segment formula:

cell_latitude_boundary = arcsin(2 * n / N)

cell_latitude_boundary is the latitude of the cell boundary that is closer to the equator, i.e. the northern boundary in the southern hemisphere, the southern boundary in the northern hemisphere. For the latitude boundary of the opposite cell's side (i.e. near to the pole), it is necessary to calculate the latitude boundary of the next cell towards the pole. We use the fact that both cells have a common border.

N – total number of cells counted vertically. It relates on the level of accuracy i.e., of the string length: 1 character – 4 cells, 2 characters – 4*8 = 32 cells, 3 characters – 32*4=128 cells, 4 characters – 128*8=1024, etc.

n – the cell number, which is determined by counting beginning at 0 from the equator. In the northern hemisphere, the row number is positive. In the southern hemisphere, it is negative.

The spherical segments' areas are the same when employing this method (see fig. 9 and fig. 10), and since there are the same number of cells in each spherical segment (because the number of columns is fixed), their areas are also the same.

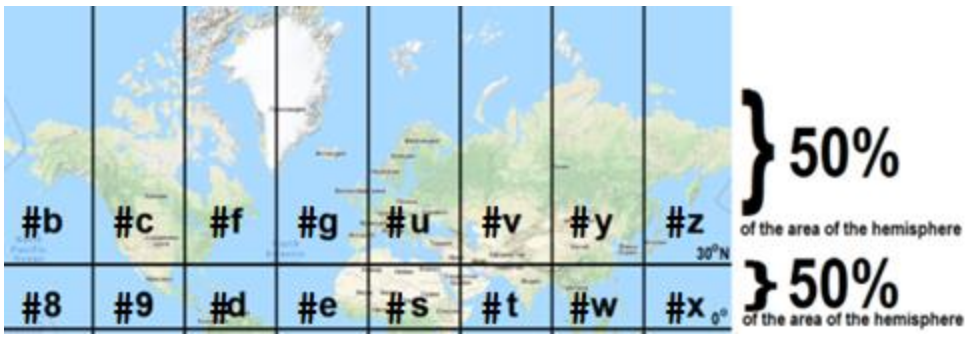

Figure 9. Areas of the two spherical segments separated by 30° parallel when using Hashgeo instead of 45° as in the classic Geohash system
Source: Own elaboration

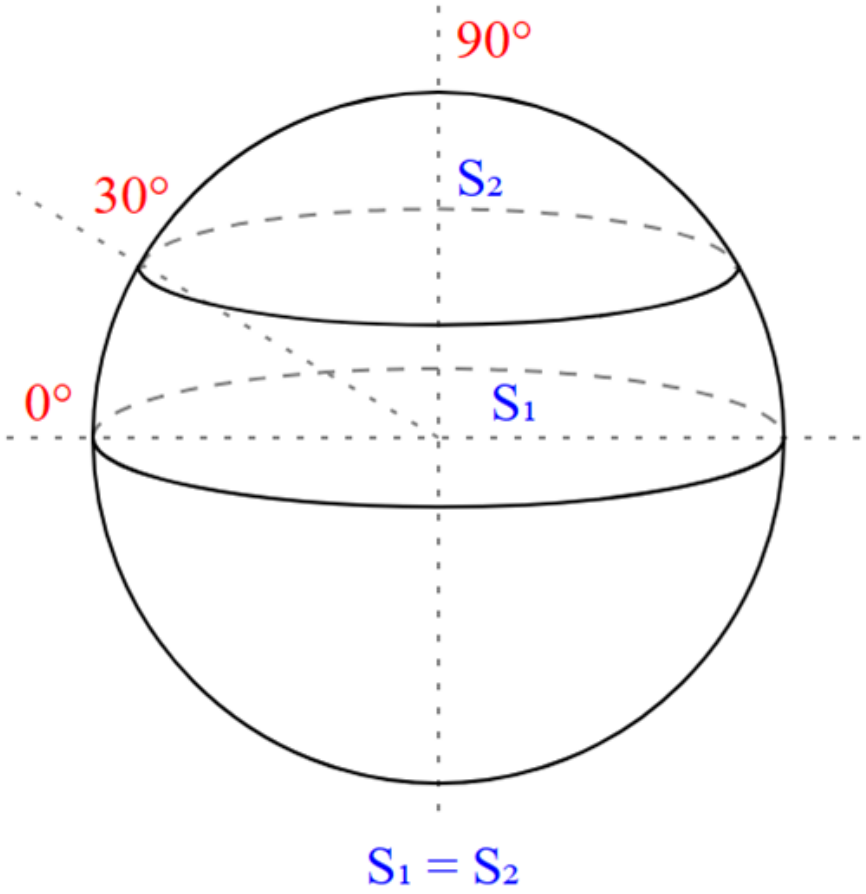

Figure 10. Area difference between spherical segments 0°-30° and 30°-90° in Hashgeo
Source: Own elaboration

To illustrate the operation of the algorithm, we have developed two examples with different levels of accuracy.

A. The calculation of the boundary latitudes at the first level of accuracy of cell "#6" covering part of the South America (fig. 11), using the Hashgeo system, is as follows:

1) For the boundary near the equator: N = 4 (since the string length is 1 character), n = 0, therefore:

cell_latitude_boundary1 = arcsin(2 * 0 / 4) = arcsin(0) = 0°.

2) For the boundary near the pole (in this case – the South Pole) the latitude of the next cell located towards the pole – cell "#h" must be calculated: N = 4, n = -1 (since it is in the southern hemisphere), therefore:

cell_latitude_boundary2 = arcsin(2 * -1 / 4) = arcsin(-0,5) = -30° = 30°S.

B. The boundary latitude computation of a cell "#ch" encompassing a part of British Columbia, Canada at the second accuracy level (fig. 12), using the Hashgeo system is as follows:

1) For the border to the equator: N = 32 (since the string length is 2 characters), n = +12 (since it is in the northern hemisphere and the row counting starts from 0), therefore:

cell_latitude_boundary1 = arcsin(2 * 12 / 32) = arcsin(0,75) = 48,59° = 48,59°N.

2) For the latitude of the border to the pole (in this case – the North Pole), the latitude of the next cell in the direction towards the pole – cell "#cj" must be found N = 32, n = +13, therefore:

cell_latitude_boundary2 = arcsin(2 * 13 / 32) = arcsin(0.8125) = 54.34° = 54.34°N.

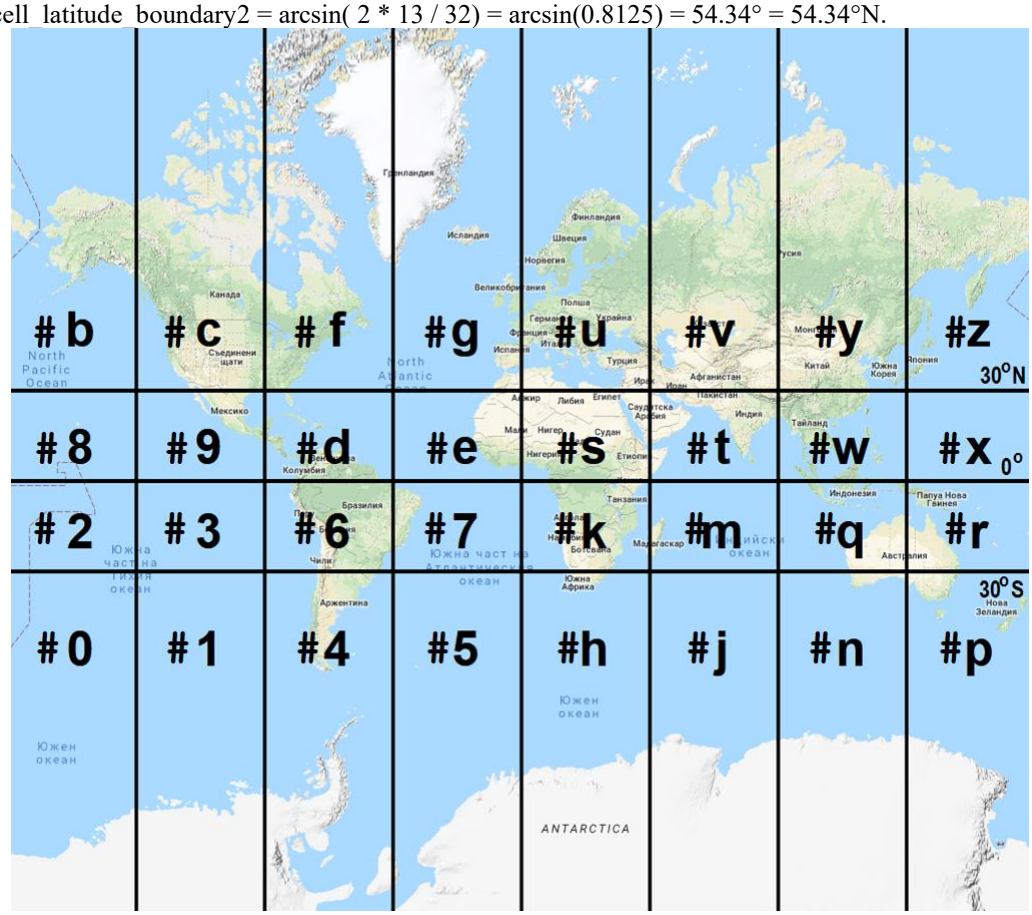

Figure 11. The map of the world divided on 32 cells at the Hashgeo's first level of precision
Source: Own elaboration

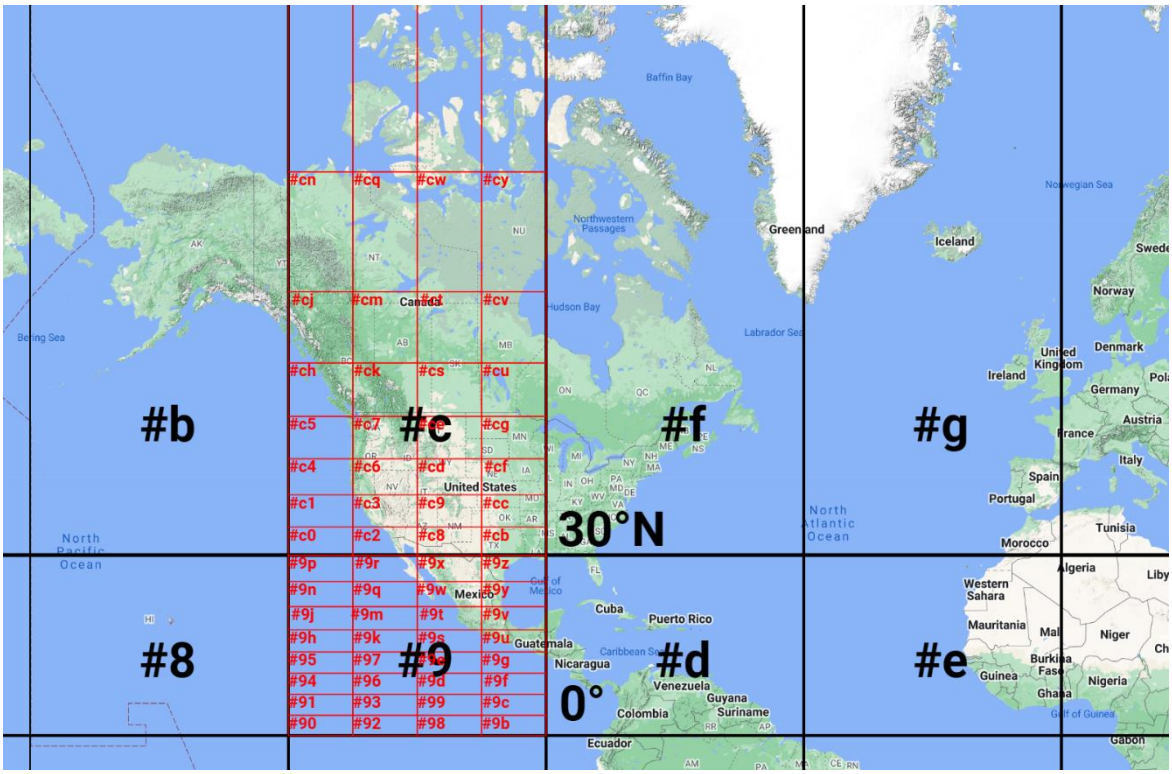

Figure 12. The Hashgeo system was used to divide the "#9" and "#c" cells into 32 subcells.
Source: Own elaboration

In an analogous way, the horizontal borders of the cells can be calculated at other levels of accuracy to ensure that all cells have the same area.

The subcells coordinates in the last column of Hashgeo cells "#9" and "#c", using the described computational method, are displayed in the Table 4.

Table 4. Bounding boxes around specific Hashgeo cells at first and second level of precision

Cell	West side	East side	South side	North side	Area of the cell (in thousands sq. km)
#9	135° W	90° W	0°	30° N	15 940
#c			30° N	90° N	15 940
#9b	101,25° W	90° W	0° N	3,58° N	498
#9c			3,58° N	7,18° N	498
#9f			7,18° N	10,81° N	498
#9g			10,81° N	14,48° N	498
#9u			14,48° N	18,21° N	498
#9v			18,21° N	22,02° N	498
#9y			22,02° N	25,94° N	498
#9z			25,94° N	30° N	498
#cb			30° N	34,23° N	498
#cc			34,23° N	38,68° N	498
#cf			38,68° N	43,43° N	498
#cg			43,43° N	48,59° N	498
#cu			48,59° N	54,34° N	498
#cv			54,34° N	61,05° N	498
#cy			61,05° N	69,64° N	498
#cz			69,64° N	90° N	498

Source: Own elaboration

The formula derived here uses the arcsine trigonometric function, which is relatively slow to execute, especially if there is no built-in support in the processor.

In order to speed up the computational operations when processing the so-called "big data" it is possible, when implementing the algorithm proposed here, to perform only one-time tessellation for equal areas at the beginning, and then to use equiangular tessellation. In this approach, at the beginning when the 0°-90° interval is divided into two parts, instead of 45°, the initial division is at 30°, and subsequently the 0°-30° and 30°-90° intervals are divided in half, i.e. values 15° and 60°.

Unfortunately, while the difference between the areas of the spherical segments locked between 0°-15° and 15°-30° is not significant – the area of the first segment is only 7.3% greater than the area of the second, the difference between the areas of the spherical segments locked between 30°-60° and 60°-90° is substantial. The area of the first segment is over 2.7 times that of the second (fig. 13).

Moreover, it turns out that the area of the spherical segment locked between 30°-60° is the largest and is 41.4% larger than the area of the 0°-15° segment and 51.8% larger than the area of the segment 15°-30°. The fraction of the areas of the four spherical segments relative to the area of the hemisphere are as follows (Hemisphere fraction 0°-90° = 100%):

Share of spherical segment 0°-15° ≈ 25.9%
Share of spherical segment 15°-30° ≈ 24.1%
Share of spherical segment 30°-60° ≈ 36.6%
Share of spherical segment 60°-90° ≈ 13.4%

Because of these large differences in areas, we consider it appropriate to apply the equal areas approach consistently for all levels of accuracy, and not just up to a certain level of accuracy, i.e., in the particular case, the 30°-90° interval needs to be divided into 48.6°, not 60° (fig. 14).

In this situation, since the calculation of arcsine can be a computationally intensive task, it is possible to apply two approaches in case of the need to speed up data processing processes:

1) Applying a caching approach (with or without precomputation). The already calculated values are stored in the cache and thus finding the corresponding latitudes is significantly faster.

2) Applying an approach to approximate arcsine calculations.

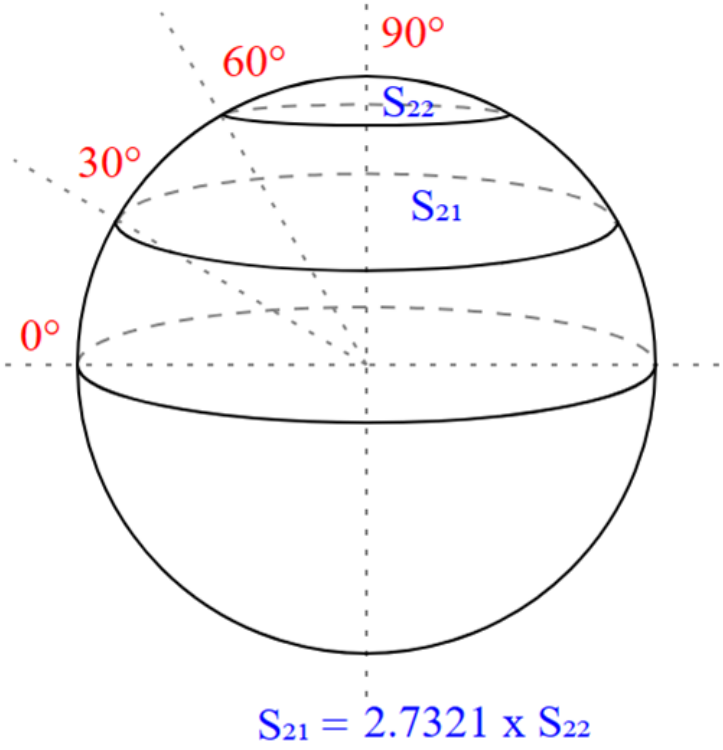

Figure 13. Area difference between spherical segments 30°-60° and 60°-90°
Source: Own elaboration

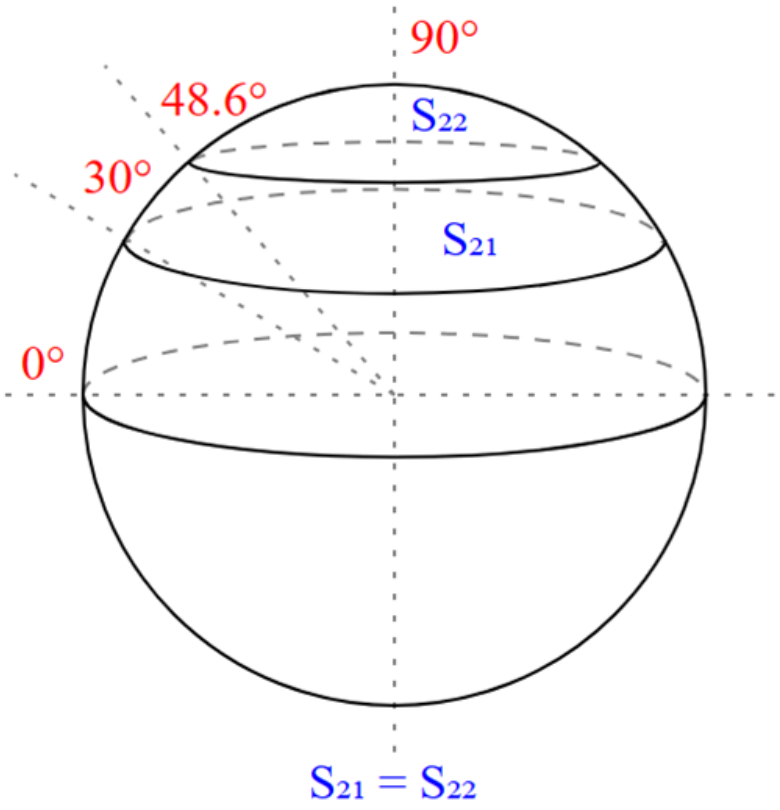

Figure 14. Area difference between spherical segments 30°-48.6° and 48.6°-90°
Source: Own elaboration

About the last option, approximate arcsine formulas could be used, in situation where the computational expense and complexity associated with calculating exact arcsine values should be small, i.e. in resource-constrained environments or real-time applications. Approximate arcsine formulas provide a practical solution by providing sufficiently accurate arcsine estimations while significantly reducing computational overhead. Approximation using polynomial expansions or rational approximations of the arcsine function within specific ranges of input values is one of the widely acclaimed approaches (fig. 15).

Function:

$$\arcsin X = \frac{\pi}{2} - \sqrt{1 - X}\,\Psi(X)$$

Range:

$$0 \leq X \leq 1$$

Approximation:

$$\Psi^*(X) = a_0 + a_1 X + a_2 X^2 + a_3 X^3$$

$$a_0 = 1.5707{,}288 \qquad a_2 = .0742{,}610$$

$$a_1 = -.2121{,}144 \qquad a_3 = -.0187{,}293$$

Figure 15. Formula for approximate arcsine calculations
Source: Hastings et al. 2015

One important advantage of these approximation formulas is that they are effective at increasing processing speed. Complex algorithms and series expansions are used in traditional methods of calculating arcsine, which require a significant amount of computational power. On the other hand, approximate formulas provide more straightforward mathematical operations, which makes them especially useful for applications that need quick calculations, like high-frequency trading in finance or signal processing in real-time systems.

Moreover, these approximation formulas considerably lessen the computational load while maintaining accuracy within predetermined ranges. They achieve a balance between computational cost and accuracy, enabling quick computations with adequate accuracy. This balance is especially useful for applications like scientific simulations, game development, and navigation systems that call for iterative calculations or real-time responses.

Another appealing feature of approximate arcsine calculations is their ability to work around hardware and software limitations. Using complex trigonometric functions may be impractical in situations where computational power or memory resources are limited. Approximate formulas provide a viable alternative by enabling efficient computations on devices with limited processing capabilities, thereby broadening the scope of applications to a variety of platforms. Furthermore, the simplicity and ease with which these approximate arcsine formulas can be implemented make them accessible to a broader audience, including programmers, engineers, and researchers. Their simple mathematical expressions and low complexity contribute to their widespread use in a variety of computational domains, allowing for rapid prototyping and development. However, it is important to note that the use of approximate arcsine formulas may introduce minor errors, particularly at the function's domain's extremes. While these errors may be acceptable in many applications, precision-critical scenarios may require the use of more accurate but computationally expensive methods.

6. Use of equal area division for data visualization

In various systems handling geospatial data analysis and visualization, there's a demand for uniformity in areas. This requirement results from the ease with which data concerning the distribution of measured values per unit area can be analysed within specific cells, as shown in fig. 16. Uniform areas allow for relatively simple data aggregation for computations such as total or average values. Additionally, proportions or percentages based on aggregated totals can be calculated. This consistency aids in the visualization of "heat maps" at various scales.

"Heat maps" are a powerful tool in the realm of geospatial data visualization, allowing for the comprehensive representation of complex information. Colour gradients are used in these visualizations to convey variations in data density across geographic areas. They facilitate the intuitive comprehension of information patterns using this technique, making them a cornerstone in fields ranging from urban planning and environmental studies to business analytics and epidemiology. One of the primary benefits of "heat maps" is their ability to represent large datasets succinctly. Geospatial data, which is frequently vast and intricate, can be dense and difficult to interpret conventionally. "Heat maps" provide a simplified yet detailed depiction of this complexity by transforming numerical data into a colour spectrum. This streamlined representation not only aids in identifying trends and outliers but also supports quick decision-making processes.

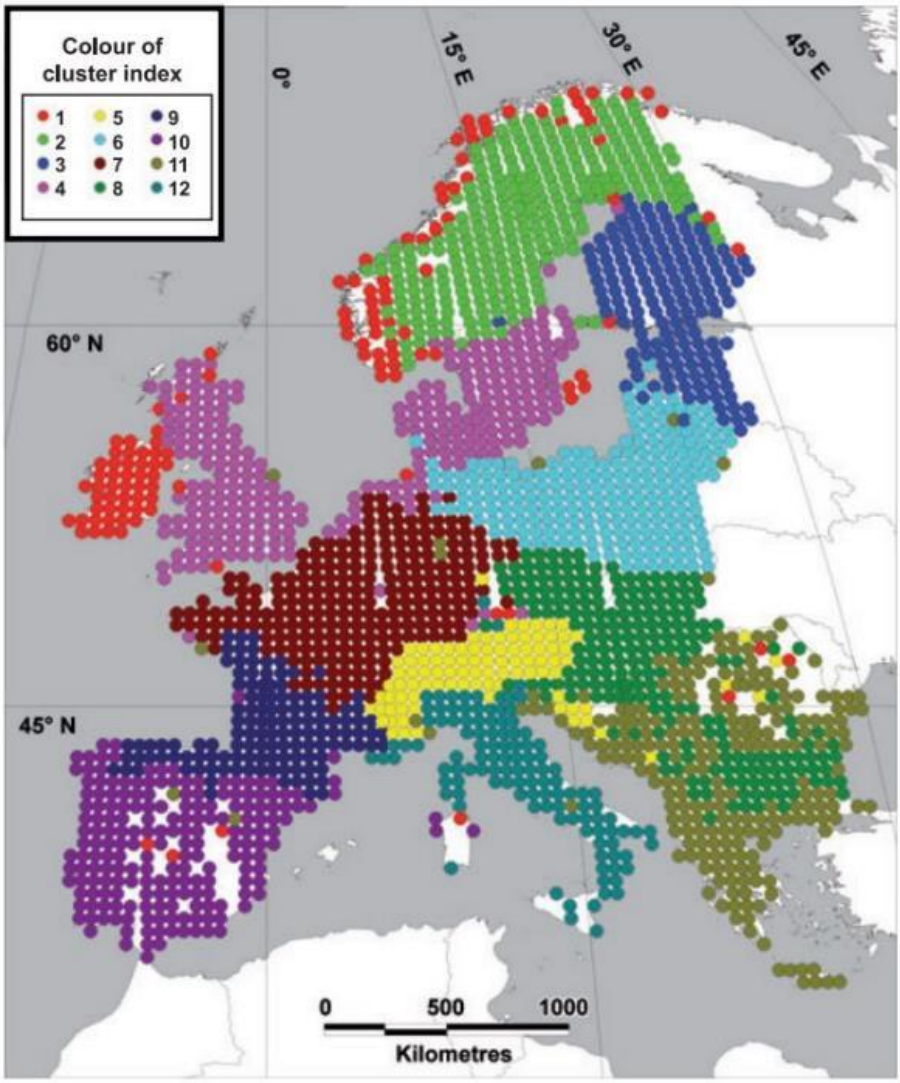

Figure 16. Example of cluster representation of European mammal data using equal area cells
Source: Heikinheimo et al. 2007

Because "heat maps" are inherently visual, they are incredibly approachable. The use of colour gradations in these maps contributes to the enhanced comprehension of visual information that humans are capable of processing. Regardless of their level of technical proficiency, stakeholders can understand spatial distributions and trends thanks to the intuitive nature of colour interpretation, which promotes more informed decision-making. Furthermore, "heat maps" facilitate efficient pattern identification. When data trends are visualized across geographic boundaries, correlations or spatial clusters that may not be visible in raw datasets are frequently found. Stakeholders can gain important insights by recognizing these patterns, which can be applied to anything from market analysis to epidemiology to understand consumer behaviour and identify disease outbreaks.

Furthermore, the adaptability of "heat maps" makes them a useful tool. These visualizations can support a wide range of data types and formats, allowing for seamless integration with various analytical methods. "Heat maps" provide a versatile platform for displaying diverse spatial attributes such as population density, traffic patterns, environmental changes, and real estate values. "Heat maps" are also a useful communication tool. Presenting complex spatial data to a variety of audiences, such as policymakers, researchers, or the general public, necessitates clarity and accessibility. These visualizations effectively communicate insights and findings through vivid and concise representations, fostering a shared understanding among stakeholders.

Notwithstanding their many advantages, it's critical to be aware of any possible drawbacks, such as the possibility of oversimplification or incorrect data interpretation. To guarantee that information is accurate and appropriately represented, caution should be used. To sum up, "heat maps" are an invaluable tool for the analysis

and visualization of spatial data. Decision-makers in a variety of fields are empowered by their capacity to condense complex data into understandable and perceptive representations, which promotes a deeper comprehension of spatial phenomena and motivates wise action.

7. Conclusion

In conclusion, the method for dividing the earth globe into horizontal segments (rows) implemented in the classical Geohash geocoding is easy and quick, but subsequently, the areas of the individual spherical segments (the rows in the grid) are totally different. The disparity, for example, gets up to 2,9 times in the variation in area between cells located close to the Equator and cells located close to the northern parts of Europe or North America, which are relatively densely populated and therefore of interest in terms of geospatial data processing. Furthermore, for the regions around 45° latitude, relative to the regions around the equator, the difference is about 1,3-1,5 times, such that the area of the cells near to the equator is bigger. This is problematic in some circumstances, and all cells from the same level of accuracy must have the same area.

The proposed approach for dividing the map into separate cells of equal area involves the use of the arcsine trigonometric function in the calculation of latitude boundaries. We call it Hashgeo because it generates cells with different locations and sizes than the original Geohash system. The area of every geocoded cell with a single symbol is the same, and around 15 939 515 sq. km. The cells geocoded with 2 symbols also have the same area – precisely 1/32 of the area of the parent cell which is geocoded with 1 symbol – 498 110 sq. km, etc. Thus, the areas of geocoded cells with 3, 4, 5, and more characters (i.e. the length of the geocoded string) can be readily determined by dividing by 32.

As directions for future work, we suggest that our approach for modifying existing geocoding system from equal angular to equal area could be applied to many other equal angular geocoding systems. For example, Quadkeys, Open Location Code/Plus Codes, Natural Area Code (NAC), etc. In this way geocoding systems will be more useful for data visualization, assuring equal area representation for better spatial analysis. For example, creating grids for ecological studies, biodiversity mapping, or natural resource management, census purposes, demographic analyses, climate modelling and analysis, climate change impacts, etc. where accurate area representation is crucial. For the benefit of urban planners, equal area zoning maps can help with land use assessments, infrastructure design, and resource distribution in an equitable manner. For disaster management and emergency response equal area planning can ensure fair resource allocation and coverage. For healthcare equal area planning can ensure fair access to medical facilities and resources across different regions. These and other potential prospects have yet to be explored.

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Is the consumption of Varna households sustainable?

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Abstract. The purpose of this study is to outline some numbers and facts about the level of sustainability of the consumption of Varna households. The results of two surveys conducted on the implementation of a project funded by the Bulgarian National Science Fund "Sustainable Consumption in the Urban Environment: Regional Differences" are used. The collection of primary data is realized through the method of personal interview. The surveys were conducted in two waves – the first wave in the period February – April 2021, and the second – in the period October – December 2022. In total, representatives of 729 Varna households were interviewed – 344 in the first wave of surveys and 385 – in the second. The results of the survey are useful for checking the sustainability of the consumption of other households (other cities) and other periods.

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1. Introduction

Achieving sustainability in development is a task of paramount importance to all. Life and nature over the past few years remind us daily that the development of our civilization can hardly continue as it has happened before. For this reason, policies, programs and actions that ensure the achievement of the UN Sustainable Development Goals are becoming increasingly important in the governance of countries, regions and communities.

Changes must occur in the way resources are utilized in relation to all activities of life. Stakeholders in ensuring these processes are all – administrative units at all levels, producers, educational institutions, households, every citizen.

Focusing on the role of households in sustainability processes is a necessity. Although it is widely believed that the main steps in terms of resource efficiency should be made by businesses, in some sectors the role of households is significant and changes in their actions would have a significant impact on the results achieved. On the other hand, one of the important aspects concerning the development and maintenance of sustainable communities is directly related to the lifestyle that households do locally. Effects can depend on everyone's daily actions to help achieve an environment based on sustainability in an environmental, economic and social sense.

One of the biggest factors in ensuring a balanced environment that needs to be worked on is consumption. The development of economic systems and the orientation of business towards a continuous increase in margins,

market shares and market presence has caused overconsumption in many developed markets in general. For a long time, in developed countries much more than necessary was bought. Consumers are stimulated to constantly make repeat purchases and increase their consumption. This is one of the problems that sustainable consumption management has been challenged to address.

When we talk about sustainable consumption, the meaning we put in is that it is consumption that is based on reasonable actions and choices. Actions and choices that ensure the right quality of life through purchases in a way that ensures that sufficient resources are available for all generations to come. Sustainability requires thinking about how to live now. Sustainability requires thinking about whether future generations will have enough resources to live well.

The purpose of this collection is to show through numbers and facts what is the level of sustainability of the consumption of Varna households. The results of two surveys conducted on the implementation of a project funded by the Bulgarian National Science Fund "Sustainable Consumption in the Urban Environment: Regional Differences" were used. The project has a wider scope, namely sustainable consumption in the cities of Varna, Sofia and Svishtov. The results of the whole project are published in a separate book. Here are presented the results only from households in the city. Varna. The collection of primary data is realized through the method of personal interview. The surveys were conducted in two waves – the first wave in the period February – April 2021, and the second – in the period October – December 2022. In total, representatives of 729 Varna households were interviewed – 344 in the first wave of surveys and 385 – in the second.

2. Main characteristics of Varna households

The largest share of the total number of surveyed households during the two waves of consultation were two- and three-person surveys. Insignificant is the share of households with five or more members.

Insignificant are the differences in the structure through the individual waves of surveys (table 1).

Table 1

Structure of households by number of members by waves of surveys

Type of household	Relative share – first wave, 2021 **(n=344)**	Relative share – second wave, 2022 **(n=385)**	Relative share – total for both waves **(n=729)**
Single person households	13,5%	10,9%	12,1%
Two-person households	30,1%	26,5%	28,2%
Three-person households	27,2%	28,9%	28,1%
Four-person households	23,4%	28,1%	25,9%
Five or more member households	5,8%	5,6%	5.7%

Source: Own calculations

The indicator "number of members in the household" is one of the quoting criteria in determining the sample.

The second quotation criterion used to determine the sample is the indicator "gender of the head of household". In terms of this indicator, common to all households surveyed, in the considerable majority the head of the household is male. Insignificant are the differences in the structure through the individual waves of surveys.

Table 2

Structure of households by gender of the head of household by waves of surveys

Gender of the head of the household	Relative share – first wave, 2021 **(n=344)**	Relative share – second wave, 2022 **(n=385)**	Relative share – total for both waves **(n=729)**
Male	75,6%	70,1%	72,9%
Female	24,4%	29,9%	28,2%

Source: Own calculations

Households with head of household of all age groups were surveyed. The average age of the head of household total for the two waves of surveys is 46.9 years. There was no difference in the average age of the head of household in the two survey waves.

The differences in the age structure of the head of household between the two waves of surveys are slight.

Table 3

Structure of households by age of the head of household by waves of surveys

Age of the head of the household	Relative share – first wave, 2021 **(n=344)**	Relative share – second wave, 2022 **(n=385)**	Relative share – total for both waves **(n=729)**
18 – 30 years	19,5%	17,9%	18,7%
31 – 40	17,7%	20,5%	19,2%
41 – 50	23,0%	20,8%	21,8%
51 – 60	17,7%	16,6%	17,1%
Over 60 years	22,1%	24,2%	23,2%

Source: Own calculations

The survey involved mainly households whose "heads" had secondary, higher or higher education. In total, the two waves of surveys are talking about: 39.9% of households have a secondary education; 58.3% - with higher or higher education. Households where the "head" has primary and lower education are not represented well in the sample. The proportions are the same in the two waves of surveys.

In 46.6% of the participating households in the two waves of surveys there are children. In the first wave, their share is 34.3%, and in the second wave - 48.6%.

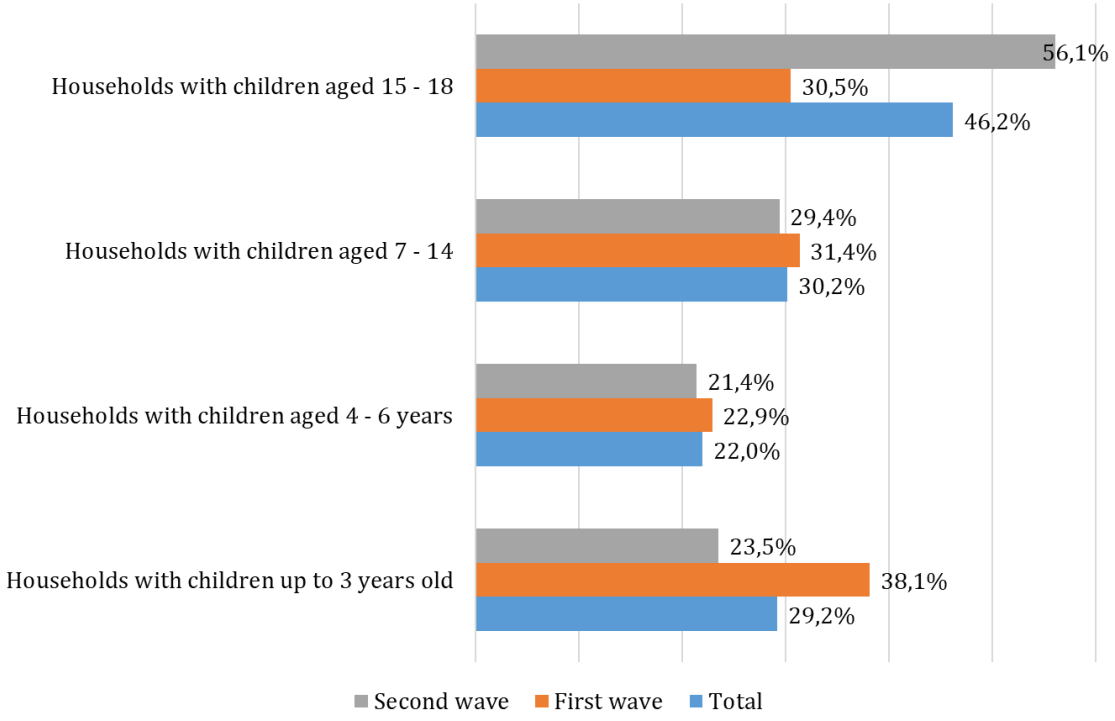

Figure 1. Structure of households by presence of children by age group, in %
Source: Own calculations

It is noteworthy that the share of households with teenagers between 15 and 18 years is the largest, and the smallest is the share of households where there are children aged between 4 – 6 years.

In 10% of the surveyed households there are no working persons. These are households of students and pensioners. The largest share is of households with two workers and the smallest – with 4 or more workers. These proportions are also preserved by waves of consultations.

Table 4

Structure of households by number of workers in the household by waves of surveys

Age of head of household	Relative share – first wave, 2021 **(n=344)**	Relative share – second wave, 2022 **(n=385)**	Relative share – total for both waves **(n=729)**
No workers in the household	10,2%	8,1%	9,1%
1 working	24,1%	19,5%	21,7%
2 workers	48,0%	52,2%	50,2%
3 workers	12,5%	16,1%	14,4%
4 and more working	5,2%	4,1%	4,7%

Source: Own calculations

The average size of the dwellings of all surveyed Varna households is 90.34 m2. The largest share of households living in dwellings with an area between 51 and 80 m2 – 43.8%. Just under 2% of households live in dwellings of more than 200 m2. There are no significant differences in the structure of the surveyed household by size of the occupied dwelling through the two waves of surveys.

Table 5

Structure of households by size of occupied dwelling by waves of surveys

Size of occupied dwelling	Relative share – first wave, 2021 **(n=344)**	Relative share – second wave, 2022 **(n=385)**	Relative share – total for both waves **(n=729)**
Up to 50 sq. m. m.	9,3%	8,3%	8,8%
From 51 to 80 sq. m.	46,8%	41,0%	43,8%
From 81 to 110 sq. m.	25,6%	38,2%	32,2%
From 111 to 140 sq. m.	11,0%	7,0%	8,9%
From 141 to 170 sq. m.	4,7%	1,8%	3,2%
From 171 to 200 sq. m.	1,5%	1,0%	1,2%
Over 200 sq. m.	1,2%	2,6%	1,9%

Source: Own calculations

Table 6

Size structure of occupied dwellings by number of household members for all respondents (n=729)

Size of occupied dwelling	One-member	Two-member	Three-member	Four-member	Five or more members	Total
Up to 50 sq. m. m.	2,9%	2,3%	2,3%	0,8%	-	8,3%
From 51 to 80 sq. m.	6,5%	15,1%	10,6%	8,1%	0,8%	41,0%
From 81 to 110 sq. m.	2,1%	7,5%	10,6%	15,1%	2,8%	38,2%
From 111 to 140 sq. m.	-	0,8%	3,4%	2,6%	0,3%	7,0%
From 141 to 170 sq. m.	-	-	0,5%	0,8%	0,5%	1,8%
From 171 to 200 sq. m.	-	-	0,8%	0,3%	-	1,1%
Over 200 sq. m.	-	0,5%	0,8%	0,3%	1,0%	2,6%

Source: Own calculations

More than 80% of the households surveyed live in an apartment.

Table 7

Structure type of main residence by waves of surveys

Type of main residence	Relative share – first wave, 2021 **(n=344)**	Relative share – second wave, 2022 **(n=385)**	Relative share – total for both waves **(n=729)**
Detached house	12,2%	9,1%	10,6%
Floor of a house	9,6%	6,2%	7,8%
Apartment	77,9%	83,6%	80,9%
Another	0,3%	1,0%	0,7%

Source: Own calculations

More than half of the households live on their own property. The surveyed households living for rent are nearly 16%.

Table 8

Structure by form of ownership of main residence by waves of surveys

Form of ownership of the main residence	Relative share – first wave, 2021 **(n=344)**	Relative share – second wave, 2022 **(n=385)**	Relative share – total for both waves **(n=729)**
Own property	65,4%	64,9%	65,2%
Property owned by parents or other close persons	18,0%	17,4%	17,7%
Rental	15,7%	15,8%	15,8%
They don't want to answer	0,9%	1,8%	1,4%

Source: Own calculations

For more than half of the inhabited main vest, the respondents said they had a massive structure, with brick walls and reinforced concrete floor structures. About a third of the main dwellings are reported to have a massive – large-panel structure.

Table 9

Structure by type of construction of the main residence by waves of surveys

Type of construction of the main residence	Relative share – first wave, 2021 **(n=344)**	Relative share – second wave, 2022 **(n=385)**	Relative share – total for both waves **(n=729)**
Massive - large-panel	36,6%	33,5%	35,0%
Massive, with brick walls and reinforced concrete floor structures	48,8%	53,5%	51,3%
Semi-massive, with stone walls and beams	2,6%	1,6%	2,1%
Massive, with stone walls and reinforced concrete slabs	2,3%	1,8%	2,1%
A flimsy (adobe, wood)	-	0,3%	0,1%
Another	0,3%	0,5%	0,4%
Don't know	9,3%	8,8%	9,1%

Source: Own calculations

3. Awareness of the role of consumption in the state of the environment

The studies proceed from the assumption that the more a household is aware of the role that consumption plays in the state of the environment, the state of resources and in the conditions of production of the products it consumes, the more likely it is to demonstrate sustainability in its consumption.

Awareness of the role of consumption in the state of the environment is measured by 17 statements aimed at realizing the relationship between specific actions and consequences that ensure the achievement of results on the sustainable development of the settlement in which they live. The formulated statements are related to the three main dimensions of sustainability, within the meaning of the UN Sustainable Development Goals – environmental, social and economic. Each statement was measured on a 5-point scale of the Likert type from 1 – "completely agree" to 5 – "completely disagree".

Table 10

Degree of agreement on a set of statements related to awareness of the role of consumption on the environment, resources and conditions of product production, in %

Claims about the role of consumption on the environment, resources and conditions in the production of products	Relative share – first wave, 2021 **(n=344)**	Relative share – second wave, 2022 **(n=385)**	Relative share — total for both waves **(n=729)**
When people buy products made in compliance with labor laws (without exploitation of workers, including children), they help companies to continue to operate in this way.	78,8%	80,3%	79,6%
If people now limit their consumption, future generations will be able to meet their needs.	71,5%	66,1%	68,6%
If people buy products from small producers, they stimulate the preservation of local values and lifestyles.	86,8%	91,1%	89,0%
When buying eco-friendly and/or natural products, people improve their quality of life.	87,6%	87,4%	87,5%
It is up to people today whether future generations will be able to meet their needs.	73,8%	77,1%	75,6%
Recycling products can increase the amount of time people will continue to meet their needs.	81,2%	83,4%	82,4%
Climate change is also due to excessive human consumption.	83,8%	81,3%	82,5%
On what vehicles people use, depends on the purity of the air.	92,9%	88,2%	90,4%
When people dispose of their waste separately, they help protect the environment.	87,6%	88,9%	88,3%
The more people try to extend the life of the appliances and items they purchase, the fewer resources on the planet will be depleted.	77,9%	83,7%	81,0%
How people heat their homes depends on the cleanliness of the air.	88,8%	84,5%	86,5%
With the choice of products and services, people can stimulate the development of poorer regions.	80,6%	79,2%	79,9%
By choosing to live in growing cities, people are contributing to the decline of more and more farmland and soils.	64,7%	64,2%	64,4%
The more people shop, the faster the planet's resources are depleted.	65,9%	67,1%	66,5%
On what and how people consume depends on the amount of waste.	91,5%	90,3%	90,8%
When buying directly from producers, people help to fairly value their efforts.	86,2%	87,9%	87,1%
When buying from local/local producers, people help to reduce the transport burden on the environment.	82,4%	81,6%	81,9%

Source: Own calculations

In general, it can be said that Varna households are very aware of the role of consumption. For all claims, the degree of agreement exceeds 64%. Statements relating to the relationship between the type and manner of products used and the amount of waste and the relationship between the type of vehicles used and air purity can be said to be accepted by almost all households surveyed.

With the data from this part of the survey, the Knowledge Index is calculated. The index shows the extent to which a household is aware of the role of consumption on the environment. The values of the index move between 0 and 1 and the closer it is to one, the higher the level of knowledge of the household about the role and influence of consumption on the environment. In terms of the values of this index, households are categorized

into four categories: 1) a household with a low level of awareness of the role of consumption – index values from 0.000 to 0.300; 2) a household with a **low to medium level of awareness of the role of consumption – index values from 0.301 to 0.500; 3) a household with a medium to high level of** awareness of the role of consumption – index values from 0.501 to 0.700 and 4) a household **with** a high level of awareness of the role of consumption — index values from 0.701 to 1.000. There are no significant differences in the structure of Varna households according to the Knowledge Index.

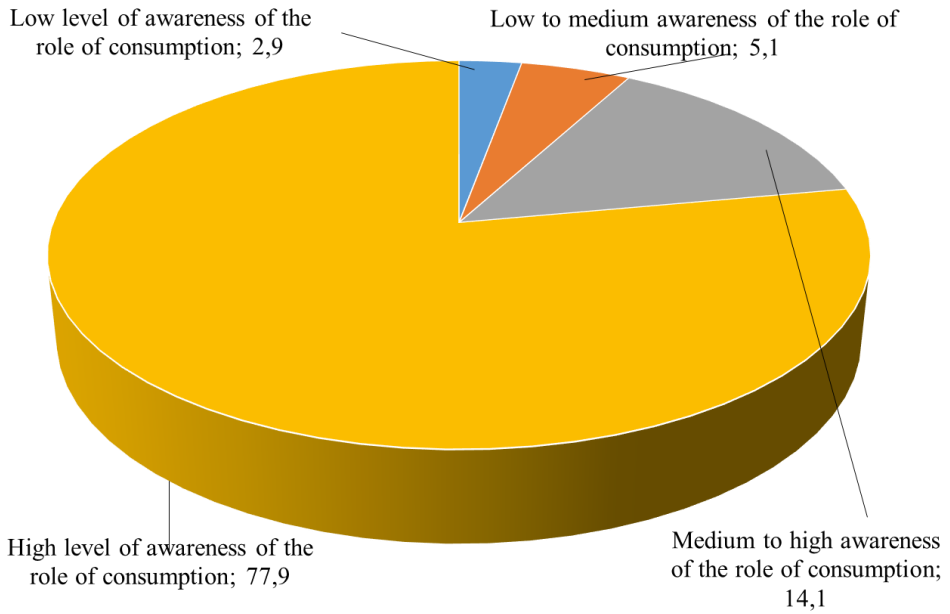

Figure 2. Structure according to Index of knowledge/awareness of the role of consumption, in % (n=729)
Source: Own calculations

4. Attitudes of Varna households towards sustainable consumption

This part of the survey is aimed at identifying two main questions: 1) to what extent Varna households have a positive attitude towards following a certain behavior that is related to sustainability and 2) to what extent it is important for Varna households to follow such behavior.

For the purpose of studying household attitudes towards following certain behaviors related to sustainability, the technique of measuring statements was again used. 18 statements have been generated that address the three main dimensions of sustainability – environmental, social and economic. 10 of the claims concern the environmental dimension and the sparing use of resources, 3 of the claims concern the social dimension of sustainable consumption and 5 of the claims relate to the economic dimension of sustainability. All statements were measured with a 5-point scale of Likert type from 1 – "completely disagree" to 5 – "completely agree".

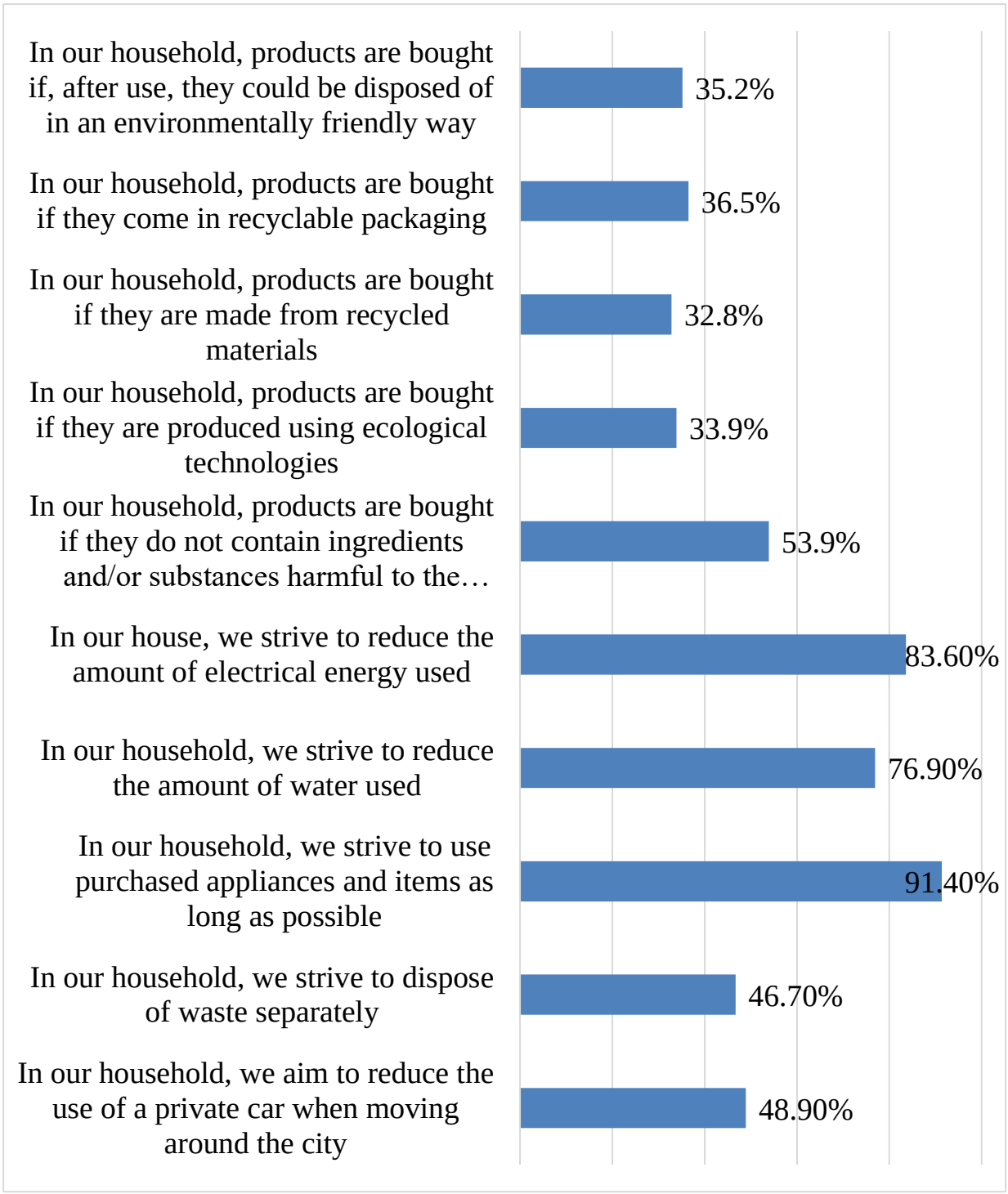

Figure 3. Attitudes of Varna households towards actions related to environmental aspects of sustainability and to frugal use of basic resources, in % (n=729)
Source: Own calculations

Only with regard to three activities related to a thrifty attitude towards the use of basic resources there is a clearly positive attitude – in terms of reducing the amount of electricity and water and using the purchased appliances and items as long as possible. This attitude is shared by 83.6% to 91.4% of Varna households.

It is noteworthy that only one third of Varna households have turned the ability to dispose of a product in an environmentally friendly way, the recyclability of packaging, the use of recyclable materials in the production of products and the content of harmful ingredients and substances into purchasing criteria. The present study does not focus its attention on the reasons for this, but clearly shows that consumer vigilance in this direction is very low. There are no significant differences in these attitudes between the two waves of surveys.

Table 11

Attitudes of Varna households towards actions related to environmental aspects of sustainability and sparing use of basic resources by waves of surveys, in %

Claims on environmental aspects of sustainable consumption and with sparing use of essential resources	Relative share – first wave, 2021 **(n=344)**	Relative share – second wave, 2022 **(n=385)**	Relative share — total for both waves **(n=729)**
In our household, products are purchased if, after completion of their use, they could be disposed of in an environmentally friendly way	39,0%	31,8%	35,2%
In our household products are bought if they are with recyclable packaging	34,8%	37,9%	36,5%
In our household are bought products if they are made of recycled materials	33,0%	32,6%	32,8%
In our household, products are bought if they are produced by environmental technologies	36,3%	31,8%	33,9%
In our household, products are purchased if they do not contain environmentally harmful ingredients and / or substances	53,9%	53,8%	53,9%
In our household we strive to reduce the amount of electricity used	83,3%	83,8%	83,6%
In our household, we strive to reduce the amount of water used	76,8%	76,9%	76,9%
In our household we strive to use purchased appliances and shoes as long as possible	89,6%	93,1%	91,4%
In our household we strive to dispose of waste separately	44,3%	48,8%	46,7%
In our household, we strive to reduce the use of a private car when moving around the city	46,1%	51,5%	48,9%

Source: Own calculations

Very pronounced attitudes are that relate to the social dimensions of sustainable consumption. Three aspects that are reflected in the UN Sustainability Goals are defined here. These are aspects that relate to the respect of workers' rights and the principles of fair use of manpower in the production of products. The data strongly show that the attitude of Varna households towards the social aspects of sustainable product production is extremely positive. There are no significant differences in attitudes between the two waves of measurements.

Table 12

Attitudes of Varna households towards actions related to social aspects of sustainable consumption by waves of surveys, in %

Claims on social aspects of sustainable consumption	Relative share — total for both waves **(n=729)**	Relative share – first wave, 2021 **(n=344)**	Relative share – second wave, 2022 **(n=385)**
In our household do not buy products that we believe workers are abused in their production	94,4%	97,3%	90,8%
In our household we do not buy products for which we believe that their production does not pay fairly the labor of workers	85,8%	88,8%	82,2%
In our household we do not buy products that we believe in their production violates the human rights of workers	94,9%	95,5%	94,1%

Source: Own calculations

Attitudes towards the economic aspects of sustainability are also very positive. Several dimensions of the economic sustainability of consumption are subject to measurement here: making purchases only in the required quantity and, if they are actually useful, making purchases without increasing the financial strain on the household. 5 statements were formulated, which were also measured on a five-point scale of Likert type from 1 "completely disagree" to 5 "completely agree".

Table 13

Attitudes of Varna households towards actions related to economic aspects of sustainable consumption by waves of surveys, in %

Claims on economic aspects of sustainable consumption	Relative share — total for both waves **(n=729)**	Relative share – first wave, 2021 **(n=344)**	Relative share – second wave, 2022 **(n=385)**
In our household we buy products only in the required quantity for the moment.	82,0%	85,3%	79,0%
In our household, we buy products only if they are really useful.	80,0%	81,7%	78,5%
In our household, we buy products only if we do not have to reach for our savings for "rainy days".	74,5%	83,5%	66,6%
In our household, we buy products only if we do not unduly burden the financial situation of the household.	88,3%	89,5%	87,3%

Source: Own calculations

With the data from this part of the study, the Attitudinal Index is calculated. The index shows the extent to which a household demonstrates positive attitudes towards environmental, social and economic aspects of sustainability. The index values range between 0 and 1 and the closer it is to one, the higher the level of knowledge of the household about the role and impact of consumption on the environment. In terms of the values of this index, households are categorized in terms of the values of this index. four categories: 1**) household with a small number of positive attitudes towards environmental, social and economic aspects of sustainable consumption – index values from 0.000 to 0.300; 2) household with a small** to medium number of positive attitudes towards environmental, social and economic aspects of sustainable consumption – index values from 0.301 to 0.500; 3) household with **medium to high number** of **positive attitudes** towards environmental, social and economic aspects of sustainable consumption – index values from 0.501 to 0.700 and 4) household with **a high number of positive attitudes** towards environmental, social and economic aspects of sustainable consumption – index values from 0.701 to 1.000. There are no significant differences in the structure of Varna households according to the Attitudinal Index.

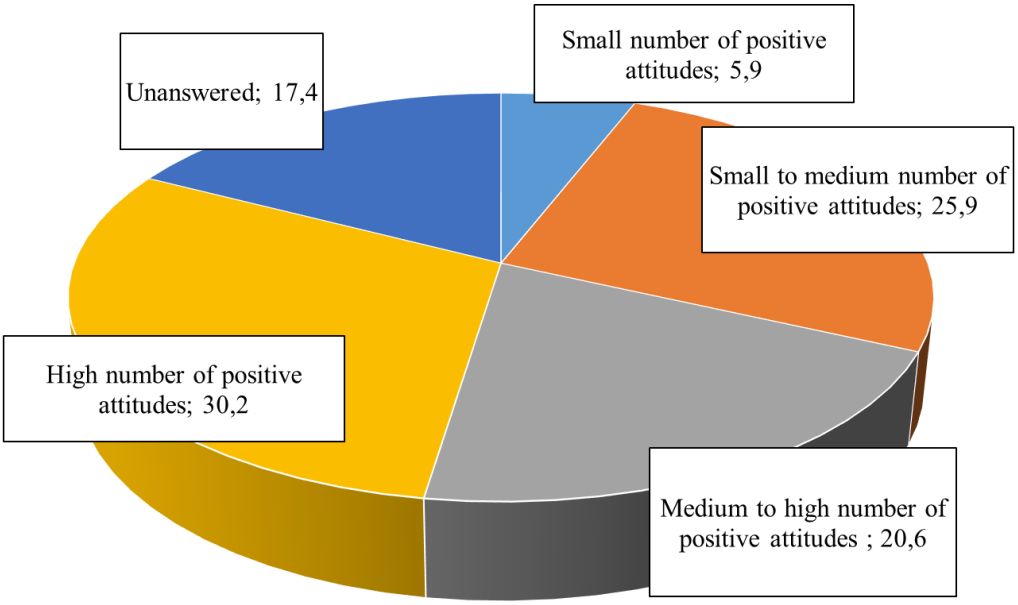

Figure 4. Structure according to Index of attitude towards environmental, social and economic aspects of sustainable consumption, in % (n=729)
Source: Own calculations

The degree of importance reflects how important the individual aspects of sustainable consumption are important for Varna households. The idea is that the more important an aspect of sustainable consumption is important for a household, the more likely it is to be reflected in consumption, i.e. to become a principle in consumption. For the purpose of measuring the degree of importance, 18 statements related to environmental, social and economic aspects of sustainable consumption have been formulated, commented on in the previous part. The statements were measured on a 5-point scale of Likert type from 1 "not important at all" to 5 "very important".

Table 14

Level of importance for Varna households of actions related to economic aspects of sustainable consumption by waves of surveys, in %

Statements of importance to economic aspects of sustainable consumption	Relative share — total for both waves **(n=729)**
For the household, it is important that when buying products, the costs do not unduly burden the financial situation of the household	94,0%
For the household is important when buying products use purchased appliances and items as long as possible	93,0%
It is important for the household not to increase the long-term indebtedness of the household when buying products	92,2%
For the household, it is important to reduce the amount of electricity used	88,0%
For the household it is important that the purchased products are really needed	87,2%
For the household, it is important when buying products not to reach for the savings for "rainy days"	85,1%
For the household is important when buying products reduces the amount of water used	81,7%
For the household, it is important that the purchased products are only in the required quantity for the time being	80,9%
It is important for the household that the purchased products do not contain	78,6%

environmentally harmful ingredients and / or substances	
For the household, it is important that the products purchased are produced by workers who are not abused	75,7%
It is important for the household that the purchased products are manufactured in compliance with the human rights of workers	74,4%
For the household, it is important that the products purchased are produced at a fair wage - the labor of the workers	72,1%
It is important for the household that products purchased after use can be disposed of in an environmentally friendly way	62,9%
It is important for the household that the products purchased are manufactured using environmental technologies	61,6%
For the household, it is important that the purchased products have a recyclable packaging	59,0%
For the household, it is important that the purchased products are made of recyclable materials	59,0%
For the household is important when buying products dispose of waste separately	54,6%
For the household, it is important when buying products reduces the use of a private car when moving around the city	54,0%

Source: Own calculations

Three of the observed activities are of high importance by almost all of the Varna households. Two of the dimensions relate to the economic aspects of sustainability (the financial situation of the household) and one to the environmental aspects of sustainability (to use products for as long as possible). All other aspects are important for more than half of the Varna households.

With the data from this part of the study, the Importance Index is calculated. The index shows the degree of importance that a household attaches to environmental, social and economic aspects of sustainability. The values of the index move between 0 and 1 and the closer it is to one, the higher the level of knowledge of the household about the role and impact of consumption on the environment. In terms of the values of this index, households are categorized into four categories: 1**) a household with a small number of dimensions that are important for the household – index values from 0.000 to 0.300; 2) a household with a small to medium number of dimensions that are important for the household – index values from 0.301 to 0.500; 3) a household with medium to high number of dimensions that are important for the** household – index values from 0.501 to 0.700 and 4) **a household with** a **high** number of dimensions**, which are important for the household** – index values from 0.701 to 1.000. There are no significant differences in the structure of Varna households according to the Attitudinal Index.

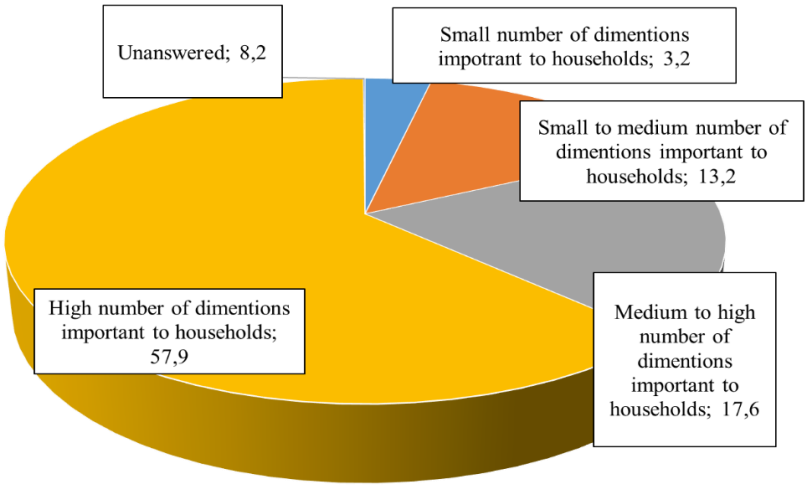

Figure 5. Structure according to Index of Importance of Dimensions on Environmental, Social and Economic Aspects of Sustainable Consumption, in % (n=729)
Source: Own calculations

5. Actions of Varna households on sustainable consumption

The focus in this part of the study is on the pursuit of actions that relate to sustainable consumption related to housing.

It is clearly seen that the renovation programs have increased to a very large extent activities related to the renovation of housing. The use of energy-saving lighting is also very widespread. At the same time, however, a little more than a third of Varna households do not own appliances that are economical in terms of energy consumption. The rate of use of solar panels in the city to heat water or generate electricity is very low.

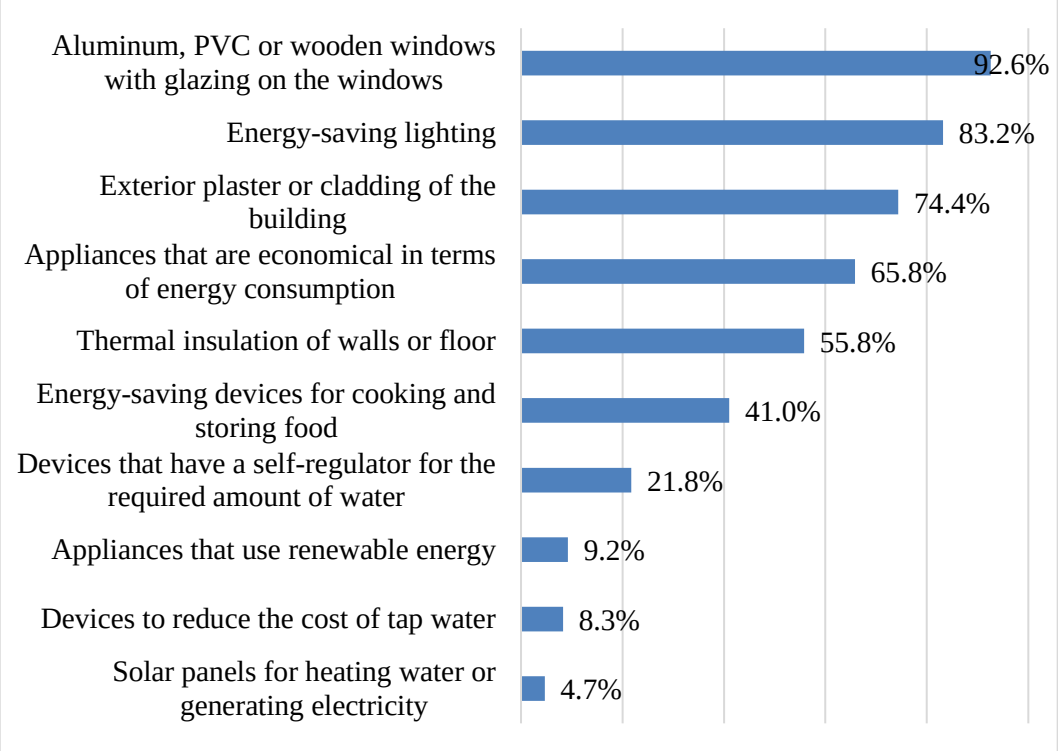

Figure 6. Appliances, objects, devices or systems owned by households, в % (n=729)
Source: Own calculations

Table 15

Appliances, objects, devices or systems owned by households by waves of surveys, in %

Appliances, objects, devices or systems owned by households	Relative share – first wave, 2021 **(n=344)**	Relative share – second wave, 2022 **(n=385)**
Aluminum, PVC or wooden windows with glazing on the windows	93,9%	91,4%
Energy-saving lighting	82,8%	83,6%
Exterior plaster or cladding of the building	74,1%	74,7%
Appliances that are economical in terms of energy consumption	67,6%	64,2%
Thermal insulation of walls or floor	65,9%	46,7%
Energy-saving devices for cooking and storing food	40,5%	41,5%
Devices that have a self-regulator for the required amount of water	17,8%	25,3%
Appliances that use renewable energy	12,8%	6,0%
Devices to reduce the cost of tap water	12,0%	5,0%
Solar panels for heating water or generating electricity	7,0%	2,6%

Source: Own calculations

The type of heating used is the next aspect to be addressed in terms of sustainable consumption related to housing.

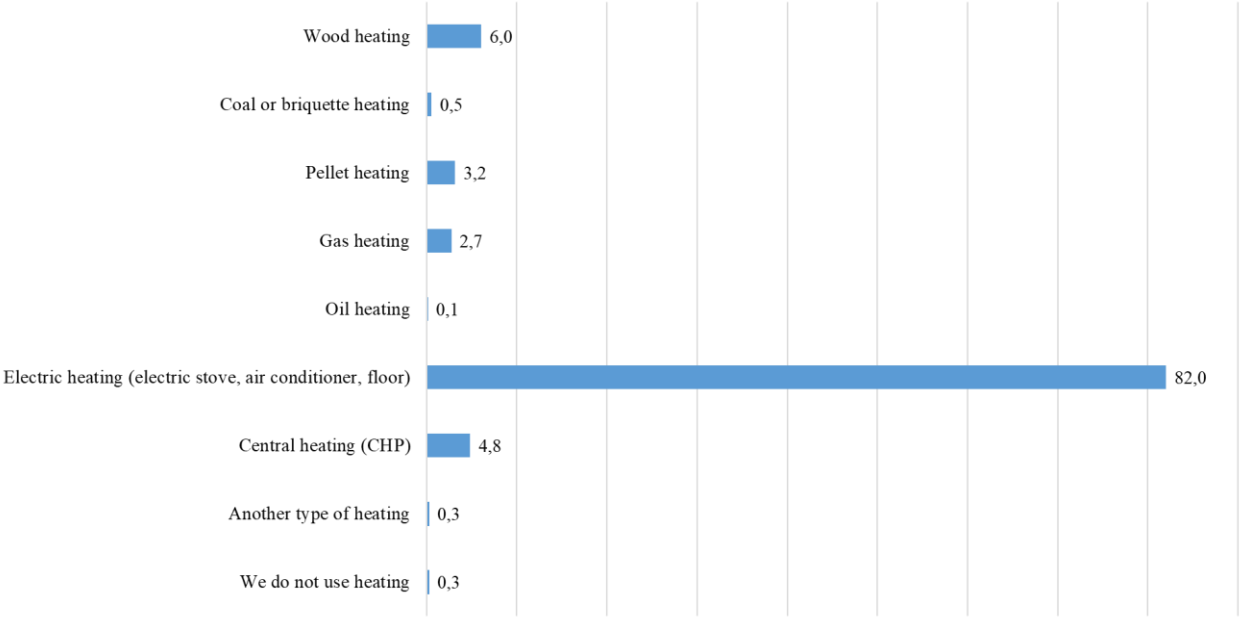

Figure 7. Type of heating used, in % (n=729)
Source: Own calculations

More than two-thirds of Varna households are heated by electricity. Wood-heated households in Varna are less than 10%.

Table 16

Striving for activities to save basic resources, total and by waves of surveys, in %

Claims on the pursuit of activities to save basic resources	Relative share — total for both waves **(n=729)**	Relative share – first wave, 2021 **(n=344)**	Relative share – second wave, 2022 **(n=385)**
We strive to NOT leave the lights on when no one is in the premises	83,3%	82,6%	83,9%
We strive to NOT let the TV work when no one is in the room	76,4%	79,1%	74,0%
We strive to NOT leave a computer plugged in for long without anyone using it	60,8%	59,9%	61,6%
We strive to NOT leave the windows open for a long time when the heating is working	79,8%	76,7%	82,6%
We strive NOT to maintain an unreasonably high air temperature in winter (above 22 degrees)	45,0%	46,5%	43,6%
We strive to NOT keep the water flushed while brushing with toothpaste	58,3%	57,0%	59,5%
We strive NOT to let go of an unfilled with clothes washing machine	64,1%	66,0%	62,3%
We strive NOT to neglect the use of night energy	56,5%	53,8%	59,0%
We strive to NOT let the soul work when soaping	40,3%	33,7%	46,2%
We strive NOT to use programs on the washing machine with a very high temperature	52,1%	52,3%	51,9%

We strive to NOT leave running water while washing dishes and utensils with detergent	62,7%	60,2%	64,9%
We strive NOT to run an incomplete with dishes and utensils dishwasher	44,2%	50,6%	38,4%
We strive to NOT use the bath in every bath	23,7%	27,0%	20,8%
None of the listed	2,3%	1,2%	3,4%

Source: Own calculations

Only with regard to lighting in dwellings there is a very high drive for thrift. Almost as high is the drive-in terms of turning off a TV when no one is watching and leaving windows for a long time while the room is heated. Only half of Varna households strive not to wash at high temperatures.

The focus in this section is on the aspiration of Varna households to follow certain actions related to nutrition that can support the environmental, social and economic sustainability of consumption.

Table 17

Striving for sustainable activities related to nutrition, total and by survey waves, in %

Claims on sustainable activities related to nutrition	Relative share — total for both waves **(n=729)**	Relative share – first wave, 2021 **(n=344)**	Relative share – second wave, 2022 **(n=385)**
To consume more organic foods, certified and distributed commercially	32,4%	27,3%	36,9%
Buying more food directly from a manufacturer	43,9%	45,9%	42,1%
To consume more food locally produced (made in Bulgaria)	65,2%	61,9%	68,1%
To consume foods and products (fruits, vegetables, meat and meat products, dairy products, etc.) own production	57,5%	60,5%	54,8%
Eating more cooked food at home	83,3%	83,1%	83,4%
Eating more food in biodegradable and/or recyclable packaging	17,7%	20,1%	15,6%
Eat mostly seasonal fruits and vegetables	73,0%	68,9%	76,6%
Avoid the use of semi-finished and semi-finished foods	61,0%	57,6%	64,2%
Avoid daily consumption of meat	31,3%	27,6%	34,5%
Eating more fish and seafood	36,6%	34,6%	38,4%
Eating More Fruits and Vegetables	78,5%	78,5%	78,4%
Eating more grains and legumes	52,0%	53,2%	50,9%
Pay attention to the type of preservatives (E's) when buying food	40,3%	35,5%	44,7%
Use reusable bags more regularly when buying food	61,9%	61,6%	62,1%
Do not maintain unnecessary food supplies.	56,4%	57,0%	55,8%
Reusing plastic bags for shopping	59,0%	55,8%	61,8%
Avoid using plastic bags for shopping	38,3%	38,4%	38,2%
Turning biodegradable waste into biofertilizer (composting)	8,0%	9,0%	7,0%
None of the listed	0,3%	-	0,5%

Source: Own calculations

Only three of the 18 activities tracked there is an aspiration of more than two-thirds of Varna households to be followed: to consume more food prepared at home; consume more fruit and vegetables and consume more seasonal fruit and vegetables (83.3%, 78.5% and 73.0%). Six of the observed activities register an aspiration to follow only one third or less of Varna households: avoiding the use of plastic bags when shopping; eating more fish and seafood; Eating more organic food, certified and commercially distributed; avoidance of daily use of meat; Consuming more food into biodegradable and/or recyclable packaging and converting biodegradable

waste into biofertilizer (composting). It should be clarified immediately that some of the activities, such as composting, for example require a very specific infrastructure to make it possible in urban environments.

Some of the actions show some differences in the two measurements, which are most likely due to sampling differences.

The problem of food waste is important.

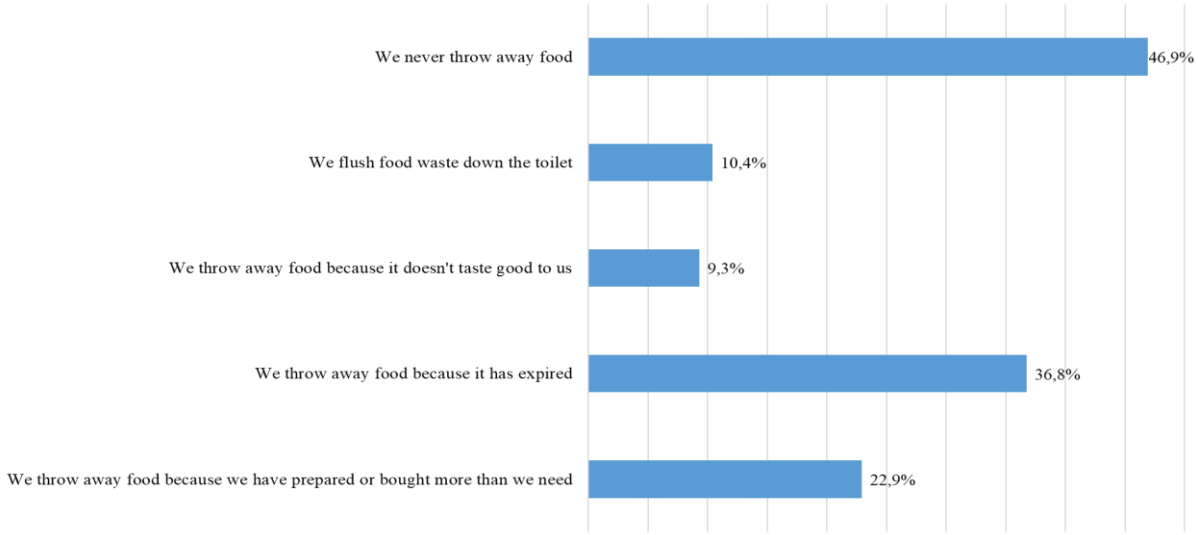

Figure 8. Reasons for food waste by Varna households, in % (n=729)[1]
Source: Own calculations

A little less than half of the Varna households surveyed through the two waves of surveys said they never throw away food. It clearly emerges that more than 50% of Varna households throw away food either because of cooked or bought more than necessary or due to expiration date.

Moving around the city is one of the key issues when it comes to sustainable development. This is the focus of this part of the study.

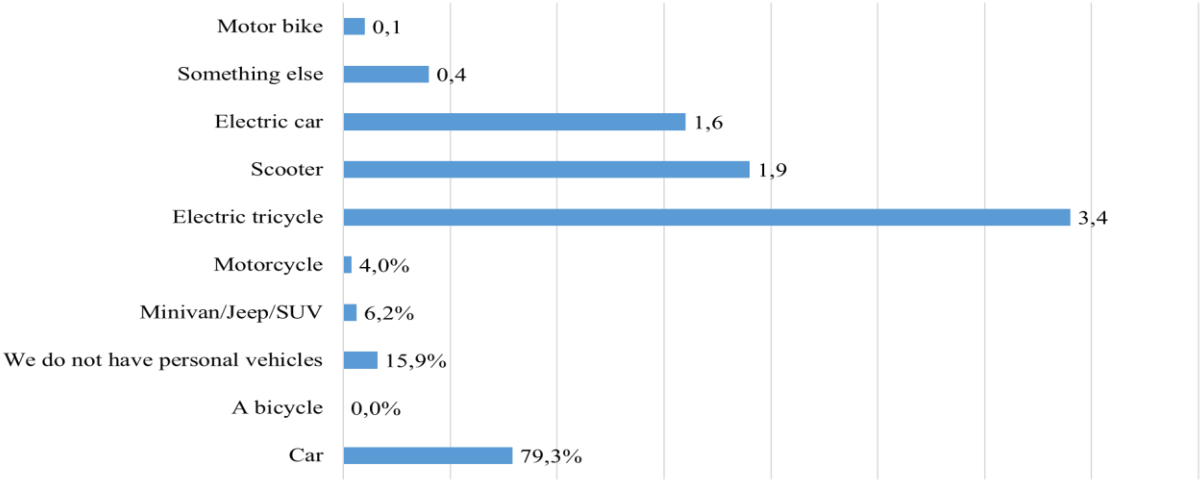

Figure 9. Vehicles owned by Varna households, in % (n=729)[2]
Source: Own calculations

[1] The sum of the percentages exceeds 100 because more than one answer is possible.
[2] The sum of the percentages exceeds 100 because more than one answer is possible.

Table 18

Vehicles owned by households by sampling waves, in %

Vehicles owned	Relative share – first wave, 2021 **(n=344)**	Relative share – second wave, 2022 **(n=385)**
Car	77,0%	81,3%
Motorcycle	5,8%	2,3%
Scooter	2,3%	1,6%
Minivan/Jeep/SUV	10,5%	2,3%
Motor wheel	0,3%	-
Bicycle	18,9%	27,8%
Electric car	1,5%	1,8%
Electric scooter	2,0%	4,7%
Another	0,3%	0,5%
We do not have personal vehicles	16,9%	15,1%

Source: Own calculations

The differences on some types of vehicles between the two waves of measurements are due to sampling features.

Table 19

Striving for sustainable activities related to urban mobility, in total and by waves of surveys, in %

Claims on sustainable activities related to movement in the city	Relative share — total for both waves **(n=729)**	Relative share – first wave, 2021 **(n=344)**	Relative share – second wave, 2022 **(n=385)**
We try to avoid traveling by car alone (one person at a time)	22,5%	18,6%	26,0%
We prefer to travel mainly by public transport.	27,3%	24,1%	30,1%
We want to travel more by bicycle.	12,6%	13,1%	12,2%
We try to walk more often	59,9%	62,2%	57,9%
We travel on motorcycles or scooters	3,3%	4,9%	1,8%
When shopping, I avoid using extra transport.	47,3%	45,6%	48,8%
We strive to use less and less private cars to move around our locality	24,4%	22,1%	26,5%
We strive to avoid using a private car when moving to the central parts of our location	33,3%	29,4%	36,9%
None of the listed	16,9%	14,0%	19,5%

Source: Own calculations

About a third of households seek to avoid using a private car when moving around in the central parts of the city. At the same time, however, almost a third also strives to move by public transport, and it should be borne in mind that these are not the same households of the previous group. Only a quarter of households register a desire to use the personal car simultaneously by more than one person.

The problems with waste and the ways in which households cope when the life of products ends is of utmost importance. Achieving wide dissemination of certain practices can be decisive for achieving the desired by all Varna citizens of cleanliness of the city (Fig.10).

The first problem that is addressed here is related to mobility and concerns how households got rid of their last private car when they decided to change it.

It is immediately noticeable that nearly 14% of households that have abandoned their old cars on the street. At the same time, about a third benefited from recycling programs for old cars.

This is how Varna households are freed from the old electrical household appliances (Fig. 11). The largest share of households sells or gives away to people in need their old household appliances. About a quarter of all households hand over their old electrical appliances to secondary raw materials, and about 20% use the services of a company to transport them from home. Slightly more than 10% of households retain these appliances.

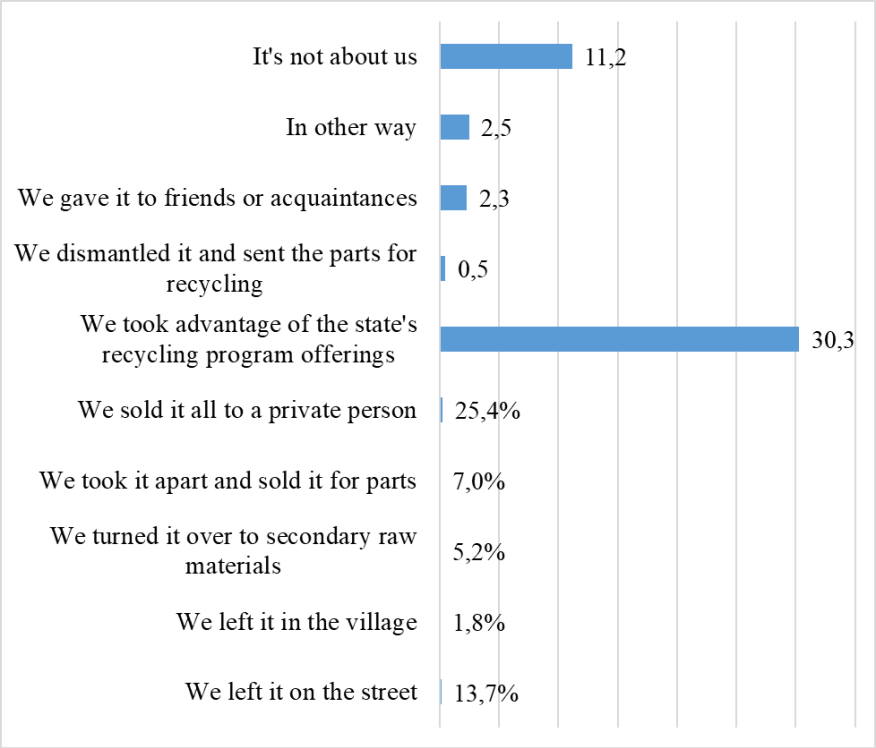

Figure 10. How Varna households got rid of the last car when they decided to change it, in % (n=729)
Source: Own calculations

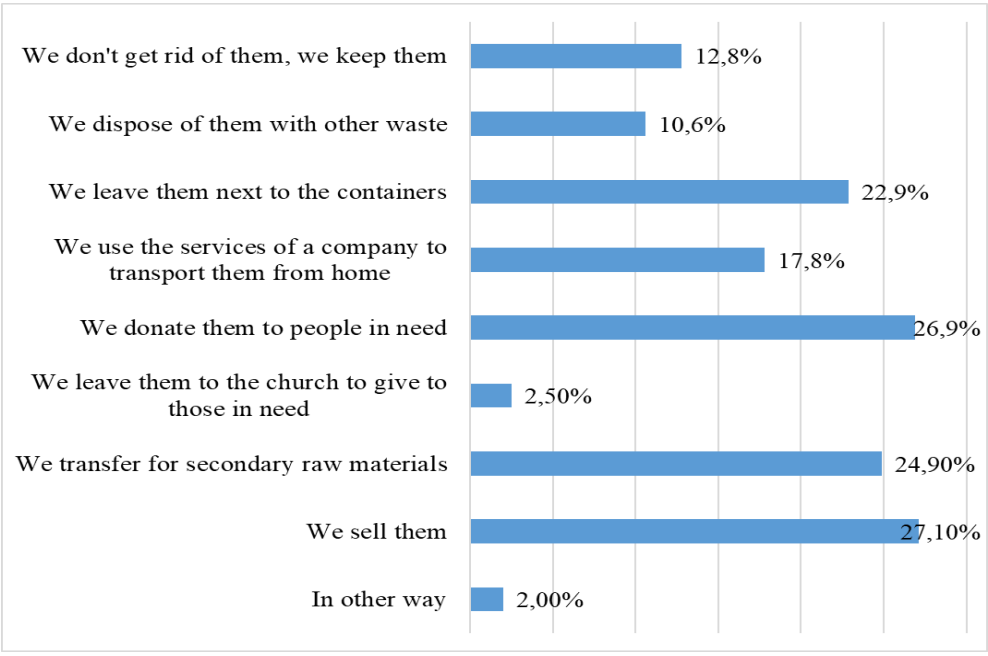

Figure 11. How Varna households got rid of the old electrical devices, in % (n=729)[3]
Source: Own calculations

[3] The sum of the percentages exceeds 100 because more than one answer is possible.

In dealing with large-scale waste, which is usually old furniture, Varna households act even more varied (Fig. 12). Approximately one-fifth carry them in the countryside – 19.7%. About 17% leave large-scale waste next to the garbage cans. About 10% use the services of transport companies that take them out of their homes. Only 2% said they were handed over for recycling.

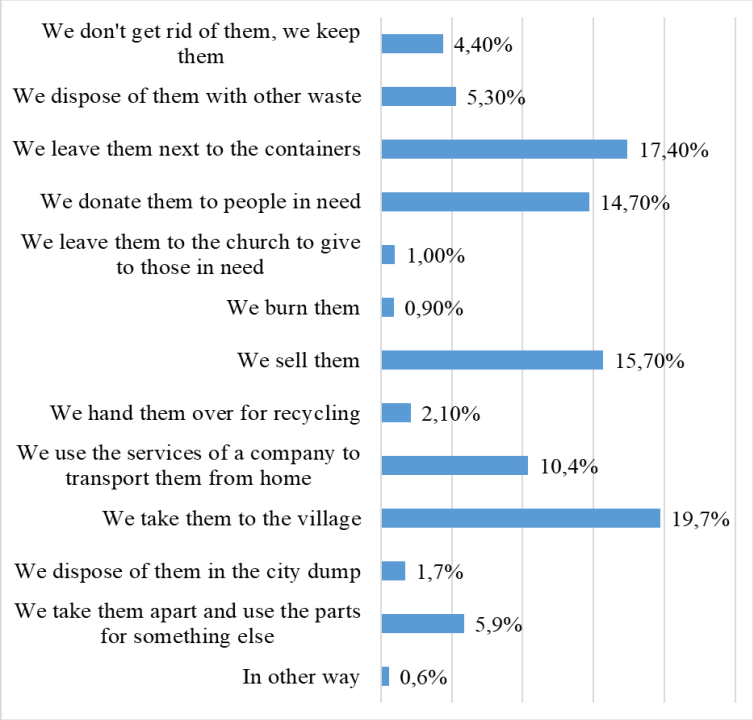

Figure 12. How Varna households got rid of the bulky waste, in % (n=729)[4]
Source: Own calculations

It is concerning that slightly more than 33% of households acknowledge throwing away exhausted batteries along with their regular waste.

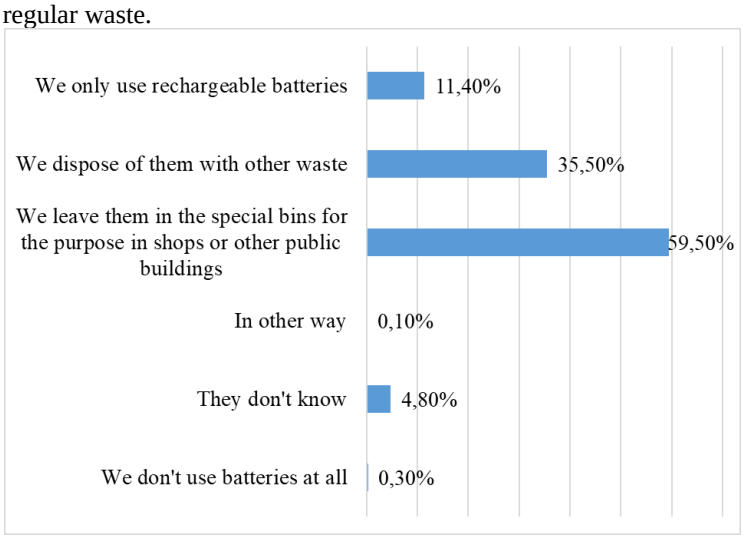

Figure 13. How Varna households got rid of old batteries, in % (n=729)[5]
Source: Own calculations

[4] The sum of the percentages exceeds 100 because more than one answer is possible.
[5] The sum of the percentages exceeds 100 because more than one answer is possible.

With hazardous waste, the situation is even worse. More than 60% of households say they throw it away with other waste, and 13% leave it next to the containers.

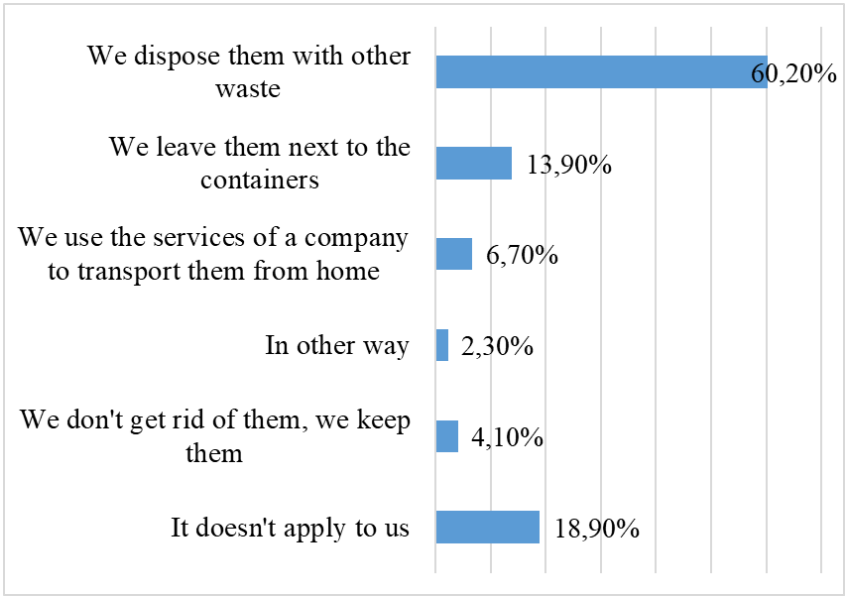

Figure 14. How Varna households get rid of hazardous waste, in % (n=729)[6]
Source: Own calculations

Only about 38% is the share of Varna households that collect and dispose of their waste separately. About a third of households say that the reason for not collecting and disposing of their waste separately is the lack of a container. Another third, on the other hand, do not throw away although there are such.

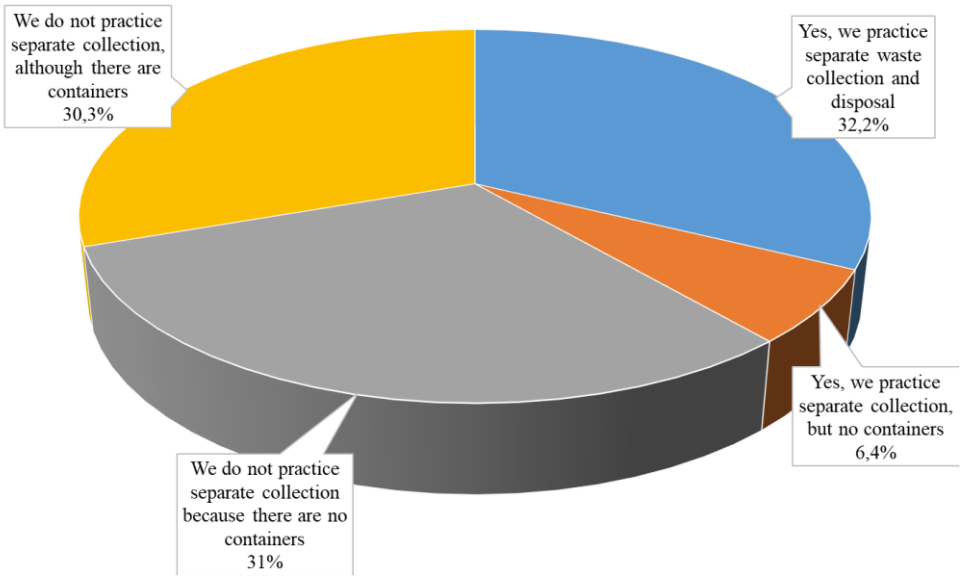

Figure 15. Do Varna households practice separate waste collection, in % (n=729)
Source: Own calculations

[6] The sum of the percentages exceeds 100 because more than one answer is possible.

With the data from the actions of Varna households on the topics "housing", "mobility", "nutrition" and "waste release" the Sustainable Consumption Index is calculated. The index shows the degree of sustainability of household consumption. The index values range between 0 and 1 and the closer it is to one, the higher the level of sustainability of consumption. From the point of view of the values of this index, households are categorized into four categories: 1) a household with a low degree of sustainability of consumption – index values from 0.000 to 0.300; 2) a household with a low to medium degree of sustainability of consumption – index values from 0.301 to 0.500; 3) a household with a medium to a high degree of sustainability of consumption – index values from 0.501 to 0.700 and 4) a household with a high degree of consumption sustainability – index values from 0.701 to 1.000.

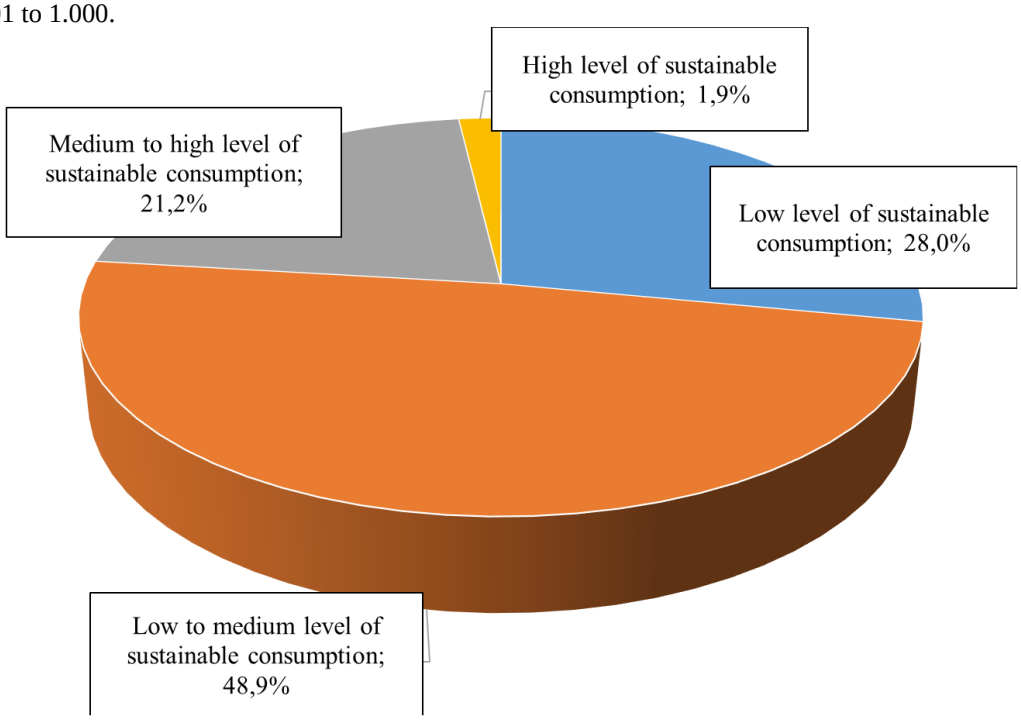

Figure 16. Structure of Varna households according to Sustainable Consumption Index, in % (n=729)
Source: Own calculations

There are no significant differences in the structure of Varna households according to the Sustainable Consumption Index.

6. Conclusions

The work on the topic gives us the right to formulate the following conclusions.

• Varna households demonstrate a very high degree of awareness of the role and impact of consumption on the environment. More than two-thirds of households have high Knowledge Index values;

• For all claims, the degree of agreement exceeds 64%. Statements related to the relationship between type and mode of use of products and the amount of waste and the relationship between type of vehicles used and air purity can be said to be accepted by almost all households surveyed.

• In general, Varna households express positive attitudes towards a large part of the environmental, social and economic aspects of sustainability. The most pronounced are the positive attitudes in: reducing the amount of electricity and water; use of purchased appliances and items as long as possible; the social and economic dimensions of sustainability.

• It is noteworthy that only one third of Varna households have turned the ability to dispose of a product in an environmentally friendly way, the recyclability of packaging, the use of recyclable materials in the production of products and the content of harmful ingredients and substances into purchasing criteria.

• Almost all households consider it extremely important, when purchasing products, that expenditure does not unduly burden the financial situation of the household; use the purchased appliances and articles as long as possible and do not increase the long-term debt of the household;

• The renovation programmes have increased the activities of households to an extraordinary extent.

• Slightly more than a third of Varna households do not own appliances that are economical in terms of energy consumption. The utilization rate of solar panels in the city is very low;

• A little more than 80% of Varna households are heated by electricity. Only 6% say they are heated by wood.

• In general, the thrift of energy and basic resources is high among Varna households. Only a third try not to wash at high temperatures.

• Only with regard to 3 out of 18 activities related to nutrition is there a high aspiration to carry them out: to consume more home-cooked food; Eat more fruits and vegetables and eat more seasonal fruits and vegetables.

• Only 23.6% of households say they own a bicycle.

• About a third of Varna households try to avoid using a private car when moving in the central parts of the city. Almost a third aspire to use public transport when moving around the city. Only a quarter of households have a desire to avoid one-person car travel.

• 14% of Varna households have abandoned their old cars on the streets of the city.

• About a quarter of Varna households leave old and unused household appliances next to the bins. Almost as much is the proportion of households that act in the same way with regard to old furniture.

• 35.5% of Varna households throw away exhausted batteries along with other waste.

• 60% of Varna households dispose of hazardous waste along with other waste.

• A little more than 60% of Varna households do not practice separate waste collection and disposal.

• More than 60% of Varna households demonstrate low levels of sustainable consumption.

Future research may focus on applying the created instrument for other cities and periods.

Navigating the Hospitality Horizon: Current Trends and Strategies for Customer Attraction and Retention in the Hotel Industry

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Abstract. The hospitality industry is undergoing rapid transformation, driven by technological innovations, shifting consumer preferences, and global events. This research explores the current trends and strategies employed by hotels to attract and retain customers in this dynamic landscape. In the realm of technological innovations, contactless check-in/check-out, mobile room keys and virtual reality experiences are reshaping the guest experience. Sustainability initiatives, encompassing green building practices, eco-friendly amenities, and community engagement, have become integral to hotel operations. Personalization and customization, driven by data-driven experiences, loyalty programs, and targeted marketing, play a pivotal role in enhancing guest satisfaction. Furthermore, health and safety measures, including enhanced cleaning protocols, health screenings, and wellness-focused services, are paramount in the post-pandemic era. The purpose of the present development is aimed at announcing the current trends and strategies for attracting and retaining customers in the hotel industry. The study uses qualitative analysis of hotel industry trends and case studies. The object of the study is geographically limited only to the hotel industry. Future studies should focus on expanding the sample for the restaurant industry as well as destinations. A set of research methods and approaches are used to achieve the goal and solve the tasks of the research, the most important of which are: theoretical analysis, comparative analysis. Results indicate a correlation between the adoption of technological innovations and positive hotel guest experiences. Sustainability initiatives contribute not only to environmental responsibility but also to positive brand perception. Personalization efforts, particularly through loyalty programs, show a direct impact on customer retention. The implementation of health and safety measures is crucial for rebuilding guest confidence and ensuring long-term sustainability. The discussion interprets these findings in the context of the broader hospitality landscape, addressing challenges, industry adaptation, and policy implications. Recommendations are provided for hotel practitioners, emphasizing the importance of aligning with emerging trends to stay competitive. The hotel industry can make actions to embrace innovation, adapt to changing consumer habits and foster a resilient and customer-centric approach in the ever-evolving hotel landscape.

Key words: hotel industry, challenges, technology, innovation, human resource.
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1. Introduction

The article addresses a critical need in the hospitality sector, recognizing the pivotal role of customer attraction and retention in the success and sustainability of hotels. This research is essential due to the dynamic and competitive nature of the hotel industry, where staying ahead of evolving trends is imperative for long-term success.

The hospitality industry is facing unprecedented challenges influenced by global events, technological advancements and changing consumer preferences. Recent disruptions, such as the COVID-19 pandemic, have significantly altered travel behaviour, safety standards, and demand patterns, posing a threat to the traditional operational models of hotels. Additionally, the rise of online booking platforms and alternative lodging options has disturbed the traditional distribution channels, requiring hotels to adapt rapidly to changing consumer habits. These challenges highlight the need for innovative strategies to attract and retain customers, ensuring revenue generation and brand sustainability.

Existing research in the field acknowledges the importance of customer attraction and retention in the hospitality industry. However, the current state of research often lacks a comprehensive exploration of the latest trends, technological innovations and holistic strategies that hotels can employ to navigate the dynamic landscape successfully. Many studies focus on singular aspects, such as loyalty programs or technology adoption, without providing an integrated view of the multifaceted challenges and opportunities faced by the hotel industry.

The gap in the existing research lies in the absence of a consolidated and up-to-date resource that guides industry professionals, stakeholders, and enthusiasts through the intricacies of contemporary challenges and innovative solutions in customer attraction and retention. The need for a comprehensive guide that not only identifies challenges but also provides actionable insights and real-world examples is evident.

The present research acts as a solution to the identified gap by offering an exploration of the evolving landscape of the hotel industry. It goes beyond the conventional focus on individual elements and presents a holistic view of the industry dynamics. By delving into current trends, technological innovations, sustainability initiatives, and health and safety measures, the research provides a nuanced understanding of the challenges and opportunities hotels face. Moreover, the inclusion of case studies demonstrates practical implementation, offering readers actionable strategies for their specific contexts.

In effect, this research is vital as it not only identifies the existing challenges in the hotel industry but also serves as a guide for navigating these challenges successfully. It contributes to the body of knowledge by offering a comprehensive resource that informs and educates industry professionals on the latest trends and best practices. By addressing the identified gap in the field, the research facilitates strategic decision-making, promotes industry-wide best practices, and empowers hotels to adapt proactively to the ever-changing hospitality landscape.

The hotel industry is a dynamic and ever-evolving sector and it plays a fundamental role in the global economy. As an integral part of the broader hospitality industry, hotels provide accommodations, dining, and various services to travelers and guests as well as employment for a number of professions. The hotel industry landscape features a combination of economic trends, technological advancements, changing consumer preferences, and ever-evolving competition.

Key Characteristics can be singled out:

Market Size and Growth

• The hotel industry is extensive, encompassing a wide range of establishments from hostels and B&Bs to boutique hotels and large international chains.

• Global travel trends and an increase in the tourism sector contribute to the industry's growth.

Diversification of Offerings

• Hotels offer diverse accommodation options, including luxury resorts, budget-friendly or boutique hotels, and extended-stay options.

• Services branch out beyond accommodation and include amenities such as dining, entertainment, spa facilities, event spaces, etc.

Competitive Landscape

• Intense competition exists among hotel chains, independent hotels, and alternative lodging options like vacation rentals and home-sharing platforms.

• Online travel agencies (OTAs) play a significant role in shaping customer choices and bookings.

Technological Integration

• The industry has embraced technology for enhanced guest experiences, with trends such as contactless check-ins, keyless entry, smart room controls, etc.

• Online booking platforms and mobile apps have become essential to hotel distribution strategies.

Sustainability Initiatives

• Increasing awareness of environmental concerns has led to a growing emphasis on sustainable practices within the industry.

• Green building certifications, energy conservation and waste reduction are becoming standard practices in the sector.

Global and Local Influences

• The industry is impacted by both global economic factors and local/regional trends.

• Political stability, currency exchange rates and geopolitical events can influence travel patterns, customer behaviour and hotel performance.

Regulatory Environment

• Hotels operate within a framework of local and international regulations, covering areas such as safety standards, building codes, zoning laws, health and sanitation standards, licensing, permits and employment practices.

• Compliance with health and safety regulations, especially in the wake of global events, has gained prominence.

Shifts in Consumer Behaviour

• Changing consumer preferences that are driven by factors like the desire for unique experiences, alternative accommodation preferences, remote work trends and a focus on wellness, impact the design and also the offerings of hotels.

• Increased reliance on online reviews and social media presence influences consumer perception and booking decisions.

Ongoing Challenges :

The hospitality industry faces a range of ongoing challenges, influenced by multiple factors including economic conditions, technological advancements, and global events. Here are some of them:

• Recent global events, such as the COVID-19 pandemic or the wars in Ukraine and Gaza, have significantly disrupted the industry, leading to changes in travel behaviour, safety standards and requirements, and demand patterns.

• Changing government policies and global travel restrictions can impact the predictability of international travel, affecting bookings and revenue for hotels.

• The rise of online booking platforms and alternative lodging options has affected traditional hotel distribution channels, requiring hotels to adapt to changing consumer behaviours.

• The industry often faces difficulties related to attracting and retaining skilled staff, which can impact service quality and operational efficiency.

• Data security and safety concerns have become critical issues, given the reliance on digital systems and the need to ensure guest safety.

• Hotels face intense competition from Online Travel Agencies and booking websites, which dominate online booking channels. Balancing the relationship with OTAs while encouraging direct bookings is an ongoing challenge for many hotels.

In summary, the hotel industry is marked by a dynamic and competitive environment where adaptability to current trends, technological integration, and a focus on guest experience are key factors for success. Continuous innovation and a customer-centric approach are essential for hotels to thrive in this ever-changing landscape.

Customer attraction and retention are a driving force in the hospitality industry, especially within the context of a highly competitive market. The significance of drawing in and keeping customer extends across various areas, shaping the success and sustainability of the hotel businesses. Here are some of the key reasons that show the importance of customer attraction and retention:

Attracting new customers and retaining existing ones directly contribute to revenue generation. This expands the customer base and at the same time ensures a steady flow of repeat business.

In a saturated market, hotels need to differentiate themselves, to stand out. Exceptional customer service, unique offerings, personalized experiences, all of these tactics have become crucial factors that set a hotel apart from the competition.

Customer retention is one of the main strategies that builds brand loyalty. Loyal customers are more likely to choose a particular hotel over competitors, even if they are offered similar alternatives. This loyalty can be a powerful asset in maintaining a stable customer base.

Satisfied customers become advocates for the hotel, sharing positive experiences with friends, family, leaving reviews on online platforms. Word-of-mouth marketing is a powerful tool, influencing potential guests and contributing to the hotel's reputation.

Retained customers are more likely to return for future accommodation. Repeat business not only ensures a steady stream of revenue but also reduces the cost of acquiring new customers, which can be substantially higher.

Marketing the hotel services to existing customers is generally more cost-effective than acquiring new ones. Satisfied guests who have had positive experiences are more likely to respond to targeted marketing efforts, reducing the need for extensive advertising budgets.

Customer feedback and insights from retained customers can be crucial for adjusting for the ever-changing market trends. Understanding customer preferences allows hotels to make informed decisions about services, amenities, and overall guest experience.

The dedication to enhancing guest experience not only satisfies existing customers but also attracts new ones seeking quality accommodations.

Relying solely on acquiring new customers without a strong retention strategy can be risky. Retained customers provide a buffer during downturns or challenging periods, stabilizing the hotel's financial performance.

Sustainable success in the hospitality industry requires a balance between attracting new customers and retaining existing ones. A holistic approach that considers the entire customer lifecycle contributes to the long-term sustainability of the business.

In summary, customer attraction and retention are fundamental to a hotel's success in a competitive market. Beyond the immediate financial impact, they contribute to a hotel's reputation, brand strength and ability to adapt to market dynamics. They are fundamental for fostering a sustainable and thriving business in the hotel industry.

The purpose and scope of the article are to provide a comprehensive and insightful exploration of the evolving landscape of the hotel industry. It also aims to inform, educate, and guide industry professionals, stakeholders, and enthusiasts by deep-diving into guiding decision making, educating professionals, promoting best practices and adapting to industry dynamics. The article explores the latest trends shaping the hotel industry, encompassing technological innovations, sustainability initiatives, personalization, and health and safety measures. It provides a snapshot of the contemporary landscape. There is a significant focus on analysing strategies employed by hotels to attract customers. This includes marketing and branding efforts, guest experience enhancement, and targeted customer segmentation. The article delves into effective strategies for retaining customers in a competitive market. Topics include loyalty programs, continuous communication, and post-stay engagement, emphasizing the importance of building long-term relationships with guests. The inclusion of case studies adds a practical dimension. By showcasing real-world examples of hotels successfully implementing innovative strategies, readers can gain actionable insights that can be applied in their own contexts. The article acknowledges the challenges faced by the hotel industry and discusses the future outlook. By addressing both current obstacles and anticipated trends, it provides a holistic view that aids readers in preparing for the future.

In essence, "Navigating the Hospitality Horizon" serves as a comprehensive guide that informs, educates, and guides industry professionals and enthusiasts in understanding and navigating the multifaceted landscape of the hotel industry with a specific focus on customer attraction and retention.

2. Discussions - current Trends in the Hotel Industry

Technological innovations have become integral to the hotel industry, redefining the guest experience and operational efficiency. One significant advancement is the implementation of contactless check-in/check-out systems. This innovation, exemplified by hotels like Marriott and Hilton, allows guests to use mobile apps for a seamless and touch-free registration process, minimizing physical contact and enhancing safety, particularly in the context of health concerns such as the COVID-19 pandemic (Marriott International, 2021; Hilton, 2021). Mobile room keys represent another transformative technology, with hotels like Starwood (now part of Marriott) pioneering keyless entry through smartphone apps. This not only streamlines the check-in process but also offers guests the convenience of accessing their rooms without traditional key cards. Digital concierge services, exemplified by platforms like ALICE and Angie Hospitality, leverage mobile technology to provide guests with instant access to information, services, and personalized recommendations, enhancing the overall guest experience (ALICE, 2021; Angie Hospitality, 2021). Additionally, virtual reality (VR) experiences have emerged as a cutting-edge trend, with some luxury resorts employing VR to offer guests immersive previews of accommodations and destination highlights before their stay, exemplifying a new era of pre-arrival engagement (Calisto, M., Sarkar, S., 2023). These technological innovations underscore the industry's commitment to leveraging advancements for guest satisfaction, operational efficiency, and safety.

Contactless check-in/check-out has emerged as a pivotal trend in the hospitality industry, catalyzed by the ongoing global emphasis on health and safety. In response to the challenges posed by the COVID-19 pandemic, hotels are increasingly adopting contactless technologies to minimize physical interactions between guests and staff. The book "Hotel Management and Operations" by Denney G. Rutherford acknowledges the significance of technology in streamlining hotel operations and enhancing guest experiences (Rutherford, 2007). Contactless check-in/check-out not only aligns with health protocols but also aligns with the contemporary traveler's desire for a seamless and efficient experience. By leveraging mobile apps, keyless entry systems, and self-service kiosks, hotels are not only prioritizing guest safety but also elevating convenience and speed in the check-in and check-out processes, thereby shaping the future landscape of hospitality services.

Mobile room keys and digital concierge services have become integral components of the contemporary hospitality experience, transforming the way guests interact with and navigate hotel services. In the book "Hotel Management and Operations" by Denney G. Rutherford, the author underscores the role of technology in enhancing operational efficiency and guest satisfaction within the hotel industry (Rutherford, 2007). The adoption of mobile room keys allows guests to seamlessly access their accommodations through their smartphones, eliminating the need for physical key cards. Additionally, digital concierge services leverage

mobile apps to provide guests with personalized recommendations, room service requests, and local information, creating a tailored and convenient experience. This trend not only aligns with the growing preference for contactless interactions but also empowers guests with greater control over their stay, shaping a more efficient and customized hospitality landscape.

Virtual reality (VR) experiences for guests have emerged as a cutting-edge trend in the hospitality industry, offering a transformative and immersive way for guests to engage with their surroundings. In the book "Augmented Reality and Virtual Reality" by Timothy Jung and Mehdi Khosrow-Pour, the authors discuss the potential of VR technologies to enhance user experiences across various industries, including hospitality (Jung & Khosrow-Pour, 2018). Hotels are increasingly leveraging VR to provide virtual tours of accommodations, allowing potential guests to explore rooms and amenities remotely. This not only caters to the preferences of tech-savvy travelers but also addresses the limitations posed by travel restrictions or concerns related to the ongoing global health landscape. By integrating VR experiences, hotels are redefining the pre-stay engagement process and setting a new standard for innovative and interactive guest interactions in the hospitality sector.

Sustainability initiatives have become a cornerstone of the hotel industry, reflecting a commitment to environmental responsibility and community engagement. Green building practices are a prominent aspect, with hotels incorporating energy-efficient technologies and environmentally friendly materials in their construction. Notable examples include the LEED-certified (Leadership in Energy and Environmental Design) hotels such as The Park Inn by Radisson in Berlin-Alexanderplatz, showcasing a dedication to minimizing environmental impact in both design and operations (Radisson Hotels, 2021). Many hotels have also embraced eco-friendly amenities and practices, incorporating biodegradable toiletries, recycling programs, and water conservation measures. For instance, Marriott International's "Serve 360: Doing Good in Every Direction" initiative emphasizes responsible sourcing and sustainable practices across its properties, promoting eco-friendly alternatives in daily operations (Marriott International, 2021). Community engagement and responsible tourism are further manifestations of sustainability in the hotel industry. Hotels actively participate in local community projects, support local businesses, and promote responsible tourism practices. The Hilton Light Stay program exemplifies this commitment, focusing on reducing environmental impact and fostering positive community engagement in destinations worldwide (Hilton, 2021). These sustainability initiatives underscore the industry's recognition of its environmental and social responsibilities, aligning hospitality with global efforts toward a more sustainable future.

Green building practices have emerged as a pivotal sustainability initiative in the hospitality industry, reflecting a commitment to environmental responsibility and resource conservation. In "Sustainable Tourism Management" by David Weaver and Laura Lawton, the authors discuss sustainable practices in the tourism sector, emphasizing the role of green initiatives in mitigating environmental impacts (Weaver & Lawton, 2014). Hotels are increasingly adopting green building practices, incorporating energy-efficient technologies, eco-friendly materials, and renewable energy sources into their infrastructure. This not only aligns with global efforts to combat climate change but also positions hotels as responsible stewards of the environment. By prioritizing sustainable construction and operational practices, hotels are not only reducing their ecological footprint but also appealing to an environmentally conscious clientele, contributing to a more sustainable and resilient future for the hospitality industry.

Eco-friendly amenities and practices stand out as a significant sustainability initiative in the hospitality industry, embodying a commitment to responsible and ethical business operations. In the book "Green Hospitality: A Case Study Approach" by Gustavo De Sá Viana and Mário Sanoja, the authors delve into case studies that exemplify sustainable practices in the hospitality sector, shedding light on the importance of environmental considerations (De Sá Viana & Sanoja, 2015). Hotels are increasingly adopting eco-friendly amenities, such as biodegradable toiletries, energy-efficient lighting, and water conservation measures, to minimize their ecological impact. These initiatives not only resonate with environmentally conscious guests but also contribute to reducing waste and resource consumption. By incorporating such practices, hotels demonstrate their dedication to sustainable tourism and foster a sense of environmental responsibility, aligning with the growing global awareness of the need for eco-conscious choices in the hospitality industry.

Community engagement and responsible tourism have emerged as crucial sustainability initiatives in the hospitality industry, reflecting a paradigm shift towards ethical and socially responsible practices. In the book "Sustainable Tourism Management" by David Weaver and Laura Lawton, the authors emphasize the importance of responsible tourism in fostering positive relationships with local communities and preserving cultural heritage (Weaver & Lawton, 2014). Hotels are increasingly integrating community engagement into their operations by supporting local businesses, implementing fair employment practices, and initiating projects that contribute to the well-being of surrounding communities. By actively participating in responsible tourism, hotels not only enhance their social impact but also create authentic and meaningful experiences for guests. This holistic approach to sustainability not only benefits local communities but also positions hotels as champions of ethical

tourism, catering to a conscious consumer base increasingly prioritizing responsible choices in their travel experiences.

In the contemporary hotel industry, personalization and customization have become key drivers of guest satisfaction and loyalty. Data-driven personalized experiences are at the forefront, with hotels leveraging guest data to create tailored stays. For instance, hotels like The Ritz-Carlton utilize customer preferences to customize room settings, ensuring that each guest's stay aligns with their individual preferences (The Ritz-Carlton, 2021). Loyalty programs and rewards are another cornerstone, fostering a sense of exclusivity and incentivizing repeat business. Marriott Bonvoy, for example, offers personalized perks based on member preferences, encouraging brand loyalty through tailored rewards and exclusive experiences (Marriott Bonvoy, 2021). Targeted marketing and dynamic pricing strategies further contribute to personalization, with hotels using data analytics to offer customized promotions and pricing based on individual preferences and booking behavior. The use of artificial intelligence in platforms like Booking.com showcases how dynamic pricing strategies can adapt in real-time, ensuring that guests receive personalized offers that resonate with their specific needs and expectations (Booking.com, 2021). Through these initiatives, hotels aim to create not only memorable stays but also foster long-lasting connections with guests, underscoring the industry's commitment to personalized service in the digital age.

Data-driven personalized experiences have become a cornerstone in the hotel industry, driven by the proliferation of technology and a deepened understanding of guest preferences. By harnessing guest data, hotels can create highly tailored and memorable stays. In "Big Data and Business Analytics" by Jay Liebowitz, the potential of data analytics in the hospitality sector is explored, highlighting its role in shaping personalized guest experiences (Liebowitz, 2015). From customized room preferences to curated recommendations, hotels can anticipate and cater to individual needs, fostering a sense of exclusivity and connection. This trend not only enhances guest satisfaction but also cultivates loyalty by demonstrating a keen awareness of each guest's unique preferences.

Loyalty programs and rewards have evolved into integral components of customer retention strategies within the hotel industry. In "Hotel Loyalty Programs: The Effects of Tier Membership and Earning and Redemption Rules on Loyalty" by Yinghua Huang and Lina Xiong, the effectiveness of points-based loyalty programs is examined, shedding light on their impact on guest loyalty (Huang & Xiong, 2019). Hotel chains leverage these programs to incentivize repeat business, offering points that guests can accumulate and redeem for various perks such as complimentary stays, room upgrades, or exclusive member benefits. By providing tangible and intangible rewards, hotels not only foster loyalty but also create a sense of value and recognition, encouraging guests to choose their properties over competitors.

Targeted marketing and dynamic pricing strategies have become pivotal in optimizing revenue and attracting specific customer segments. In "Marketing Analytics: A Practical Guide to Improving Consumer Insights Using Data Techniques" by Mike Grigsby, the role of data analytics in refining marketing strategies is explored, emphasizing the importance of targeted approaches (Grigsby, 2015). Hotels leverage data to identify customer segments, allowing for personalized marketing campaigns that resonate with specific demographics. Concurrently, dynamic pricing strategies enable hotels to adjust room rates based on demand, optimizing revenue in real-time. This dynamic approach not only enhances the hotel's competitiveness in the market but also ensures that pricing aligns with customer expectations, contributing to both attraction and retention in an increasingly competitive landscape.

The hotel industry has witnessed a paradigm shift in prioritizing health and safety measures, especially in response to global events like the COVID-19 pandemic. Enhanced cleaning protocols have become a cornerstone, with hotels implementing rigorous sanitation practices to ensure the well-being of guests and staff. According to the American Hotel and Lodging Association (AHLA), enhanced cleaning measures often involve increased frequency of cleaning, the use of hospital-grade disinfectants, and a focus on high-touch surfaces (AHLA, 2021). Health screenings and contact tracing have become integral components of hotel safety strategies. Some hotels, like Four Seasons, have introduced health questionnaires, temperature checks, and contact tracing apps to identify potential risks and protect the health of guests and employees (Four Seasons, 2021). Wellness-focused amenities and services have gained prominence, addressing guests' physical and mental well-being. For instance, hotels such as Westin Hotels & Resorts offer wellness packages, fitness amenities, and healthy dining options to cater to the growing demand for health-conscious travel experiences (Westin Hotels & Resorts, 2021). These health and safety measures not only reassure guests but also exemplify the industry's commitment to providing secure and comfortable environments during their stays.

Enhanced cleaning protocols have swiftly become imperative health and safety measures within the hospitality industry, responding to the global imperative for heightened hygiene standards in the wake of the COVID-19 pandemic. In "Safety Management Systems in Aviation" by Alan J. Stolzer, Carl D. Halford, and John J. Goglia, the importance of safety protocols, including cleanliness, is highlighted across industries,

emphasizing their role in mitigating risks (Stolzer et al., 2008). Hotels have implemented rigorous cleaning regimens, incorporating hospital-grade disinfectants, increased frequency of cleaning public spaces, and advanced sanitation technologies to reassure guests of their commitment to their well-being. These protocols not only address immediate health concerns but also contribute to a long-term shift in guest expectations regarding cleanliness and safety in hospitality establishments.

Health screenings and contact tracing have emerged as critical health and safety measures in the hospitality industry, representing proactive efforts to identify and mitigate the spread of infectious diseases. The article "Contact Tracing, Testing, and Control of COVID-19" by Sunil Solomon et al. emphasizes the importance of contact tracing in managing disease outbreaks (Solomon et al., 2020). Hotels have implemented health screenings, including temperature checks and symptom assessments, at entry points to identify potential risks. Contact tracing, often facilitated through digital tools, enables swift response in case of an infection. By adopting these measures, hotels not only prioritize guest safety but also contribute to the broader community health, fostering an environment of trust and responsibility.

Wellness-focused amenities and services have gained prominence as integral health and safety measures in the hospitality industry, catering to the holistic well-being of guests. In "Wellness Tourism: Bibliographic and Conceptual Review" by Javier Batista-Álvarez et al., the authors discuss the growing trend of wellness tourism, emphasizing the importance of holistic well-being in travel experiences (Batista-Álvarez et al., 2019). Hotels are increasingly offering wellness amenities such as in-room fitness equipment, mindfulness sessions, and health-conscious menus to enhance guests' physical and mental well-being. These offerings not only align with the current health-conscious climate but also position hotels as advocates for guest wellness, contributing to an environment where guests feel both safe and cared for during their stay.

3. Results - Customer Attraction Strategies and Customer Retention Strategies

Marketing and branding play pivotal roles in the hotel industry, shaping how establishments are perceived and attracting guests in a highly competitive landscape. A strong online presence and strategic use of social media have become indispensable tools for hotels. According to "Social Media and the Hospitality Industry" by Mody and Aiken, engaging social media strategies help hotels connect with their audience, showcase their offerings, and build brand awareness (Mody & Aiken, 2016). Influencer collaborations have gained prominence as hotels recognize the impact of influencers on consumer decisions. For instance, hotels like W Hotels have partnered with influencers to amplify their reach and create authentic, engaging content that resonates with their target audience (W Hotels, 2021). Unique selling propositions (USPs) have become critical in differentiating hotels from competitors. The book "Hospitality Marketing Management" by David Bowie and Francis Buttle emphasizes the importance of identifying and promoting unique aspects that set a hotel apart (Bowie & Buttle, 2011). Examples include the Ritz-Carlton's renowned service excellence or Airbnb's unique offering of diverse and personalized accommodations. Through effective marketing and branding strategies, hotels can not only capture the attention of potential guests but also cultivate a distinctive identity that fosters brand loyalty in an ever-evolving market.

Establishing a robust online presence and implementing effective social media strategies have become pivotal customer retention tools in the hotel industry. As explored in "Social Media Marketing in Tourism and Hospitality" by Roberta Minazzi, social media plays a central role in shaping consumer perceptions and fostering brand loyalty (Minazzi, 2019). Hotels utilize platforms like Instagram, Facebook, and Twitter not only to showcase their offerings but also to engage with guests on a personal level. By consistently sharing visually appealing content, responding to customer inquiries, and leveraging user-generated content, hotels create a digital community that extends beyond the physical stay. This continuous engagement contributes to brand familiarity, customer loyalty, and positive word-of-mouth, establishing a lasting connection with the audience.

Influencer collaborations have emerged as a dynamic customer retention strategy, leveraging the reach and credibility of social media influencers to strengthen brand affinity. In the book "Influencer Marketing For Dummies" by Kristy Sammis, Cat Lincoln, and Stefania Pomponi, the authors highlight the impact of influencer marketing on consumer trust and brand loyalty (Sammis et al., 2020). Hotels often collaborate with influencers whose followers align with their target audience, providing an authentic and relatable endorsement of their offerings. These partnerships not only attract new customers but also reinforce the loyalty of existing ones. Influencers, through engaging content and firsthand experiences, contribute to a positive brand image, encouraging repeat visits and fostering a sense of community among the hotel's audience.

Crafting unique selling propositions (USPs) has become a crucial customer retention strategy in the hotel industry, differentiating brands in a competitive market. In "Strategic Marketing for Health Care Organizations: Building a Customer-Driven Health System," Philip Kotler and Joel Shalowitz emphasize the significance of establishing a unique and compelling value proposition to attract and retain customers (Kotler & Shalowitz,

2011). Hotels distinguish themselves by offering distinctive services, amenities, or experiences that set them apart. Whether it's themed accommodations, exclusive packages, or specialized services, USPs create a memorable and differentiated experience for guests, fostering brand loyalty. By consistently delivering on these unique promises, hotels not only attract new customers intrigued by the novelty but also retain a loyal customer base seeking the distinct value offered by the brand.

Guest experience enhancement in the hotel industry is a multifaceted approach that involves meticulous attention to design, local partnerships, and innovative amenities. The book "Hotel Design, Planning, and Development" by Walter A. Rutes underscores the significance of design in creating memorable guest experiences by considering factors such as aesthetics, functionality, and comfort (Rutes, 2011). Hotels often engage in local partnerships to offer guests unique and authentic experiences. For example, the Ace Hotel in New York City collaborates with local artists, musicians, and businesses to curate a distinctive and community-driven experience for its guests (Ace Hotel, 2021). Innovative amenities and services contribute significantly to guest satisfaction. The "Hotel Management and Operations" book by Denney G. Rutherford emphasizes the importance of providing amenities that cater to evolving guest preferences (Rutherford, 2007). Hotels like Aria Resort & Casino in Las Vegas incorporate innovative technologies, such as in-room automation and personalized services through digital concierge platforms, to enhance the overall guest experience (Aria Resort & Casino, 2021). By integrating these elements, hotels can create a memorable and differentiated experience for their guests, fostering loyalty and positive word-of-mouth.

Design and aesthetics play a pivotal role in shaping the guest experience and serve as a potent customer retention strategy in the hotel industry. Explored in "Hotel Design, Planning, and Development" by Walter A. Rutes and Richard H. Penner, the authors highlight the significance of creating visually appealing and immersive environments to captivate guests (Rutes & Penner, 2012). Hotels invest in architectural and interior design that reflects a distinct aesthetic, fostering a unique ambiance that resonates with their brand identity. Whether it's contemporary elegance, historical charm, or avant-garde innovation, the visual appeal contributes to a memorable stay. Guests often seek out hotels based on their design preferences, and a cohesive and aesthetically pleasing environment enhances the overall guest experience, leading to increased satisfaction and loyalty.

Fostering local partnerships to offer unique experiences has become a strategic approach in both enhancing the guest experience and retaining customers in the hotel industry. As explored in "Strategic Management for Tourism, Hospitality and Events" by Nigel Morgan et al., such partnerships contribute to a destination-centric approach, creating memorable and authentic experiences for guests (Morgan et al., 2016). Hotels collaborate with local businesses, artisans, and tour operators to provide guests with exclusive access to the culture, cuisine, and attractions of the destination. This not only enriches the guest experience but also establishes an emotional connection with the locale, fostering a sense of authenticity that goes beyond the confines of the hotel. By offering these unique and localized experiences, hotels can differentiate themselves and create lasting memories, encouraging guests to return for the distinct and enriching offerings.

Innovative amenities and services stand out as key elements in both retaining customers and elevating the overall guest experience in the hotel industry. "Hotel Front Office Management" by James A. Bardi emphasizes the role of innovative services in shaping guest satisfaction and loyalty (Bardi, 2017). Hotels continually strive to introduce novel offerings, such as smart room technology, personalized concierge apps, or unique wellness programs. These innovative services not only cater to evolving guest preferences but also contribute to a sense of exclusivity and differentiation. Guests are more likely to return to hotels that consistently surprise and delight them with inventive amenities, fostering a relationship built on continued discovery and satisfaction. By staying ahead of trends and embracing innovation, hotels enhance their competitive edge and create a compelling reason for guests to choose their establishment for future stays.

Targeted customer segmentation is a fundamental strategy in the hospitality industry, involving a deep understanding of specific demographics to tailor services and experiences. In "Hospitality Strategic Management: Concepts and Cases" by Cathy A. Enz and "Segmentation, Targeting, and Positioning in Global Markets: International Hotel Chains in China" by Shuo Cheng, the importance of understanding diverse customer segments is emphasized (Enz, 2010; Cheng, 2014). For instance, luxury hotels like The Ritz-Carlton strategically tailor their services to high-income individuals, offering personalized services, exclusive amenities, and luxurious accommodations, catering to the specific desires and expectations of this demographic (The Ritz-Carlton, 2021).

Geotargeted marketing campaigns represent a sophisticated approach to customer segmentation in the hospitality industry. In addition, events and packages tailored to customer interests form a dynamic aspect of targeted customer segmentation. By aligning offerings with the preferences and interests of distinct customer segments, hotels can enhance customer satisfaction, loyalty, and overall brand perception.

Understanding and catering to specific demographics is a nuanced customer retention strategy that aligns seamlessly with targeted customer segmentation in the hotel industry. As discussed in "Hospitality Marketing

Management" by Robert D. Reid and David C. Bojanic, segmenting the market based on demographics allows hotels to tailor their services to the distinct preferences and needs of different customer groups (Reid & Bojanic, 2006). Hotels employ sophisticated customer relationship management (CRM) systems to gather and analyze data, enabling them to understand the preferences of specific demographics, be it families, business travelers, or millennials. By customizing amenities, room configurations, and services to align with the unique expectations of each segment, hotels enhance guest satisfaction, increase the likelihood of repeat business, and build long-term loyalty by consistently delivering a personalized and targeted experience.

Geotargeted marketing campaigns have become a strategic tool for customer retention, especially when aligned with targeted customer segmentation in the hotel industry. Explored in "Strategic Marketing for Health Care Organizations: Building a Customer-Driven Health System" by Philip Kotler and Joel Shalowitz, geotargeting allows hotels to reach specific customer segments based on their geographic location, tailoring marketing messages to their unique needs (Kotler & Shalowitz, 2011). By leveraging geotargeting, hotels can send personalized promotions, exclusive offers, and relevant information to guests in specific regions. This not only enhances customer engagement but also contributes to the sense of being valued by the hotel. Geotargeted campaigns ensure that the hotel's marketing efforts are not only relevant but also resonate with the diverse preferences of different geographic segments, ultimately fostering loyalty and repeat business.

Tailoring events and packages to customer interests is a strategic approach that aligns with targeted customer segmentation, fostering customer retention in the hotel industry. In "Strategic Management for Tourism, Hospitality and Events" by Nigel Morgan et al., the authors emphasize the importance of understanding and catering to customer interests to create compelling offerings (Morgan et al., 2016). Hotels, armed with insights from customer segmentation data, design events and packages that resonate with the specific preferences of their target audience. Whether it's themed events, wellness retreats, or adventure packages, these tailored offerings create a sense of exclusivity and personalized value. By consistently providing experiences aligned with customer interests, hotels not only enhance guest satisfaction but also establish a strong connection with their audience, encouraging repeat visits and building a loyal customer base.

The customer loyalty programs of the large luxury chains are extremely attractive and enticing – usually the conditions of the program include all objects from the portfolio with all locations in the world, with the main goal being to increase the share of regular customers. The basic model of customer loyalty programs involves generating a certain number of nights or amounts - unlocks a new status/level according to the specific system, which in turn provides access to free services and additional discounts.

There is examples with some of the client programs of global chains:

• Accor customer loyalty program - Accor Live Limitless- includes 3,000 properties, ranging from lower-end Novotel and Ibis hotels to the iconic Raffles and Fairmont, Sofitel, plus Onefinestay vacation rentals. Members earn points for every €10 on their hotel bills and can redeem them for additional services.

• Hilton's customer loyalty program - Hilton Honors- Hilton Honors now has more than 118 million members who can earn and redeem points at more than 6,600 participating properties in 119 countries worldwide. Its 18 brands include everything from the budget Hampton Inn & Suites to the luxury Waldorf Astoria, along with Conrad, DoubleTree and Curio Collection, among others. Regular members earn 10 points per dollar spent at the chain's properties, as well as elite status bonuses that include a Hilton Honors Surpass Amex or Hilton Honors Aspire Amex credit card and one free weekend award per year.

• InterContinental Hotels Group customer loyalty program - IHG Rewards- InterContinental Hotels Group, which includes well-known chains such as Holiday Inn, Hotel Indigo and Kimpton, has recently been expanding its luxury footprint, with the acquisition of Six Senses and Regent, among other developments. Members of its loyalty program can earn and redeem points at over 6,000 destinations in almost 100 countries worldwide. Loyal guests also receive an IHG Rewards Club Premier card, which provides automatic platinum status and benefits such as bonus points, a range of welcome amenities and free nights.

Loyalty programs have become integral to the hotel industry, serving as powerful tools to foster customer retention and brand loyalty. Points-based systems are a common feature, where guests accumulate points based on their stays, which can later be redeemed for free nights, upgrades, or other perks. In "Hotel Loyalty Programs: The Effects of Tier Membership and Earning and Redemption Rules on Loyalty," researchers Yinghua Huang and Lina Xiong discuss the effectiveness of points-based loyalty programs in building customer loyalty (Huang & Xiong, 2019). Marriott Bonvoy exemplifies a successful points-based system, offering members the ability to earn and redeem points across a vast network of hotels, creating a sense of value and exclusivity for loyal customers (Marriott Bonvoy, 2021).

Exclusive member benefits play a crucial role in enhancing the attractiveness of loyalty programs. "Customer Relationship Management in the Hospitality Industry: Principles and Practices" by Robert C. Ford and Michael C. Sturman emphasizes the importance of offering unique privileges to loyalty program members (Ford & Sturman, 2011). Hotels like Hilton Honors provide exclusive benefits such as room upgrades, late

check-outs, and access to executive lounges for their loyal members, creating a sense of recognition and appreciation (Hilton Honors, 2021). These exclusive perks not only incentivize repeat business but also contribute to a positive and personalized guest experience.

In recent years, gamification and engagement strategies have emerged as innovative approaches to enhance the effectiveness of loyalty programs. The article "Gamification in Tourism: A Review of the Literature" by Ivana Bušljeta Tonković and Tamara Rakić discusses how gamification elements can contribute to customer engagement (Bušljeta Tonković & Rakić, 2017). Hotels incorporate gamified features, such as challenges, badges, and tier progress, to make loyalty programs more interactive and enjoyable. For instance, the World of Hyatt program introduces gamified elements like "Quests" where members can earn bonus points for completing specific activities during their stays, encouraging ongoing participation and interaction with the loyalty program (World of Hyatt, 2021). By infusing elements of gamification, hotels not only increase member engagement but also make the loyalty experience more dynamic and enjoyable for their guests.

Customer retention in the hospitality industry is a strategic imperative, and continuous communication plays a pivotal role in fostering lasting relationships with guests. Email newsletters and personalized updates represent a direct and effective means of staying connected with customers. In "Hospitality Marketing Management" by David Bowie and Francis Buttle, the authors highlight the significance of personalized communication in maintaining customer relationships (Bowie & Buttle, 2011). Hotels often use email newsletters to share exclusive offers, upcoming events, and personalized recommendations based on guests' preferences. For instance, boutique hotels like The Standard leverage personalized email campaigns to keep guests informed about new services, special promotions, and local experiences, contributing to ongoing engagement and retention (The Standard, 2021).

Surveys and feedback mechanisms are essential tools for continuous communication and relationship-building. "Customer Relationship Management in the Hospitality Industry: Principles and Practices" by Robert C. Ford and Michael C. Sturman underscores the importance of gathering feedback for service improvement and customer satisfaction (Ford & Sturman, 2011). Hotels often employ post-stay surveys and feedback forms to solicit guest opinions on their experiences. The Ritz-Carlton, renowned for its commitment to exceptional service, actively seeks feedback from guests through post-stay surveys, enabling the hotel to address concerns promptly and enhance future guest experiences (The Ritz-Carlton, 2021).

Social media engagement and responsiveness have become integral components of continuous communication in the hospitality industry. The book "Social Media and the Hospitality Industry" by Rocio Bloomfield and Andrew S. Manikas discusses the impact of social media on customer engagement (Bloomfield & Manikas, 2019). Hotels leverage platforms like Facebook, Twitter, and Instagram to engage with guests, respond to inquiries, and share real-time updates. For instance, brands like Four Seasons maintain an active presence on social media, responding promptly to guest comments and inquiries, thereby fostering a sense of connection and demonstrating a commitment to customer satisfaction (Four Seasons, 2021). Through these continuous communication channels, hotels can strengthen customer relationships, address concerns proactively, and create a sense of loyalty among their guests.

Post-stay engagement is a critical aspect of customer retention in the hospitality industry, providing hotels with an opportunity to maintain a connection with guests even after their departure. Beyond the traditional check-out process, hotels recognize the value of maintaining a connection with guests after their departure. This engagement encompasses a range of activities, including follow-up communications, surveys, exclusive post-stay offers, and referral programs. By soliciting feedback through surveys, hotels gain valuable insights into the guest experience, enabling them to address any concerns and continuously improve their services. Post-stay communication, often facilitated through personalized emails or mobile apps, serves not only to express gratitude but also to keep guests informed about upcoming promotions or special offers. Exclusive post-stay discounts and perks not only incentivize guests to consider a return visit but also contribute to the overall positive perception of the hotel. Additionally, referral programs encourage satisfied guests to share their positive experiences with friends and family, effectively turning them into brand ambassadors. In essence, post-stay engagement is a strategic effort to extend the relationship beyond the physical stay, fostering brand loyalty, encouraging repeat business, and amplifying positive word-of-mouth marketing.

Follow-up communications and surveys serve as valuable tools for gauging guest satisfaction and obtaining insights for future improvements. In "Hotel Management and Operations" by Denney G. Rutherford, the importance of post-stay surveys in evaluating the guest experience is emphasized, providing hotels with valuable feedback for enhancing service quality (Rutherford, 2007). Leading hotel brands like Marriott often send post-stay emails containing surveys to gather guest opinions, allowing them to address any concerns and showcase a commitment to continuous improvement (Marriott International, 2021).

Exclusive post-stay offers and discounts play a crucial role in enticing guests to return. The book "Customer Relationship Management in the Hospitality Industry: Principles and Practices" by Robert C. Ford

and Michael C. Sturman highlights the importance of creating value for customers to encourage repeat business (Ford & Sturman, 2011). Hotels often extend exclusive post-stay offers, such as discounted rates, complimentary upgrades, or additional amenities for future stays. For example, Hilton Honors, the loyalty program of Hilton Hotels, frequently sends personalized post-stay offers to members, fostering a sense of appreciation and incentivizing return visits (Hilton Honors, 2021).

Referral programs and incentives are additional strategies that contribute to post-stay engagement and customer retention. The article "Customer Loyalty: A Multi-Attribute Approach" by Jacob Jacoby and David B. Kyner highlights the role of incentives in influencing customer loyalty (Jacoby & Kyner, 1973). Hotels often encourage guests to refer friends and family by offering incentives such as discounts on future stays, complimentary services, or loyalty points. For instance, the Kimpton Inner Circle program rewards guests for referring others, creating a sense of community and encouraging guests to share their positive experiences with others (Kimpton Hotels & Restaurants, 2021). Through effective post-stay engagement strategies, hotels not only enhance customer loyalty but also leverage satisfied guests as brand ambassadors, contributing to sustained business success.

Several hotels have successfully implemented innovative strategies to distinguish themselves in a competitive market and enhance the guest experience.

• Marriott International's Bonvoy Program

Marriott International's Bonvoy program exemplifies a successful implementation of customer attraction and retention strategies. The Bonvoy program combines a points-based system, exclusive member benefits, and personalized experiences. As discussed in "Hotel Management and Operations" by Denney G. Rutherford, Marriott's approach caters to various customer segments, offering a range of options for earning and redeeming points, exclusive member perks, and personalized services based on individual preferences (Rutherford, 2007). This innovative strategy has positioned Marriott as a leader in customer loyalty within the hospitality industry.

• Marriott's "VRoom Service"

One notable example is Marriott International's use of virtual reality (VR) experiences. Marriott's "VRoom Service" initiative allowed guests to order in-room VR experiences, providing virtual travel adventures from the comfort of their hotel rooms. This innovative approach not only engaged guests in a unique way but also showcased Marriott's commitment to leveraging technology for guest satisfaction.

• The Ritz-Carlton's Personalization Excellence

The Ritz-Carlton has distinguished itself through a commitment to personalized service. The brand's use of guest data to anticipate and cater to individual preferences, as mentioned in "The New Gold Standard: 5 Leadership Principles for Creating a Legendary Customer Experience Courtesy" by Joseph Michelli, has significantly contributed to customer attraction and retention (Michelli, 2008). By focusing on creating memorable and personalized experiences for each guest, The Ritz-Carlton has successfully differentiated itself in a competitive market.

• Four Seasons' Social Media Engagement

Four Seasons has leveraged social media as a powerful tool for customer attraction and retention. In "Social Media and the Hospitality Industry" by Rocio Bloomfield and Andrew S. Manikas, the authors discuss the impact of social media on customer engagement (Bloomfield & Manikas, 2019). Four Seasons actively engages with its audience on platforms like Instagram, sharing visually appealing content, responding to comments, and showcasing the unique experiences offered at their properties. This strategy has not only attracted new customers but also fostered a sense of community and loyalty among existing patrons.

• Hilton's Digital Key

Another example comes from Hilton Hotels, which has embraced contactless technology for a seamless guest experience. Hilton's Digital Key feature allows guests to use their smartphones as room keys, streamlining the check-in and check-out process. This contactless approach not only enhances guest convenience but also aligns with current health and safety concerns, showcasing Hilton's commitment to adaptability and guest well-being.

• Aria Resort & Casino personalized experiences

Furthermore, the Aria Resort & Casino in Las Vegas exemplifies the use of data-driven personalized experiences. Aria utilizes a comprehensive guest data system to anticipate individual preferences, enabling personalized services such as room temperature and lighting control based on guest history. This commitment to data-driven personalization enhances the overall guest experience, making each stay unique and tailored to individual preferences.

These examples illustrate how leading hotels leverage innovation to differentiate themselves and provide exceptional guest experiences, setting new standards in the hospitality industry.

The innovative strategies implemented by hotels have had a profound impact on both customer attraction and retention, redefining industry standards and elevating the overall guest experience.

• Customer Attraction and Connection

Firstly, Marriott International's VR experiences and Hilton's Digital Key feature have significantly contributed to customer attraction. The immersive and tech-forward initiatives capture the attention of modern travelers seeking unique and convenient experiences. These cutting-edge technologies not only attract tech-savvy guests but also position these hotels as industry leaders, drawing attention and admiration from potential customers.

• In terms of retention, these strategies have fostered a deeper connection between guests and the hotels. The convenience of Hilton's Digital Key, for example, contributes to a streamlined and hassle-free experience, enhancing guest satisfaction and increasing the likelihood of return visits. Similarly, Marriott's VR experiences create memorable moments that go beyond a traditional stay, fostering a positive emotional connection that encourages guests to choose Marriott for future travels.

• Enhanced Loyalty and Repeat Business

Marriott Bonvoy's integrated approach has resulted in enhanced customer loyalty and repeat business. The points-based system and exclusive member benefits incentivize guests to choose Marriott properties repeatedly, fostering a sense of exclusivity and recognition.

• Elevated Brand Image and Guest Satisfaction

The Ritz-Carlton's emphasis on personalized service has elevated its brand image and contributed to high levels of guest satisfaction. By anticipating and fulfilling individual needs, the brand has created a reputation for excellence, attracting discerning customers seeking unparalleled service.

• Aria Resort & Casino's data-driven personalized experiences play a significant role in both attracting and retaining customers. By leveraging guest data to anticipate and fulfill individual preferences, Aria not only attracts guests seeking tailored experiences but also builds a strong foundation for guest loyalty. The impact on retention is evident as personalized stays contribute to a sense of exclusivity and a higher likelihood that guests will choose Aria for subsequent visits.

• Community Building and Brand Advocacy

Four Seasons' social media engagement strategy has not only attracted new customers but has also fostered a community of brand advocates. By actively participating in online conversations and sharing user-generated content, Four Seasons has created a loyal customer base that serves as ambassadors for the brand.

In conclusion, the case studies of Marriott International's Bonvoy program and Vroom Service, The Ritz-Carlton's commitment to personalization, Hilton's Digital Key, Aria Resort & Casino's data-driven personalized experiences and Four Seasons' strategic use of social media collectively underscore the transformative impact of innovative strategies in navigating the ever-evolving hospitality landscape. These success stories illuminate not only the creative approaches adopted by leading hotels but also the tangible outcomes these strategies yield in terms of customer attraction and retention.

The Marriott Bonvoy program stands out as a model of versatility, accommodating diverse customer preferences through its points-based system and exclusive member benefits. This comprehensive approach has resulted in heightened customer loyalty and increased repeat business, positioning Marriott as a leader in the competitive hospitality market. The Ritz-Carlton's dedication to personalized service has not only elevated its brand image but has also set a gold standard for guest satisfaction. By treating each guest as an individual with unique preferences, The Ritz-Carlton has created an exceptional reputation, attracting guests seeking unparalleled and personalized experiences.

Four Seasons' adept use of social media as a tool for engagement showcases the evolving nature of customer interaction in the digital age. The brand's active participation in online communities and the sharing of visually appealing content has not only attracted new customers but has also fostered a virtual community of brand advocates. The impact extends beyond mere customer attraction; it signifies the power of social media in building a loyal customer base that actively promotes and advocates for the brand.

In summary, these innovative strategies not only attract customers with a taste for cutting-edge experiences but also foster loyalty by delivering exceptional and personalized services. They showcase a commitment to staying ahead of industry trends, meeting evolving guest expectations, and creating lasting impressions that contribute to the sustained success of these hotels.

These case studies collectively affirm that innovative strategies are not only essential for staying competitive but are integral to creating lasting impressions on customers. Beyond immediate financial gains, the strategies employed by these hotels contribute to building strong, emotional connections with guests. In navigating the hospitality horizon, these success stories serve as beacons, guiding the industry towards a future where customer-centric approaches are paramount for sustained success and resilience. As the industry continues to evolve, these lessons offer valuable insights for hotels seeking to enhance customer experiences and solidify their positions in an increasingly dynamic market.

4. Challenges and Future Outlook

The hotel industry, a dynamic and ever-evolving sector, is currently grappling with a myriad of challenges and opportunities related to customer attraction and retention. As hotels adapt to contemporary trends and implement innovative strategies, they encounter obstacles ranging from data privacy concerns to the integration of advanced technologies. Simultaneously, the future outlook holds promise, with emerging trends that signify a transformative shift in how hotels engage with and retain their customers. This part of the article will delve into the multifaceted challenges faced by the industry in the present scenario, exploring the complexities of implementing current trends, and then pivot to a forward-looking perspective, envisioning the potential trajectory and opportunities that lie ahead. In navigating this intricate landscape, hotels must not only address existing challenges but also position themselves strategically to leverage future trends for sustained success and customer satisfaction.

There are multiple challenges that can be seen in the current trends of the hospitality industry. Many of them are encompassing the customer attraction and retention strategies.

The increasing reliance on data-driven strategies for personalization and targeted marketing raises concerns about data privacy. Customers may become apprehensive about sharing personal information, leading to challenges in implementing effective personalized experiences. "Privacy and the New Rules of Engagement: A Guide for Continuing the Customer Journey" by Susan T. Spencer addresses the evolving landscape of data privacy and its impact on customer engagement (Spencer, 2020).

While sustainability initiatives are gaining traction, implementation can be challenging due to the associated costs and operational changes. "Sustainable Hospitality and Tourism as Motors for Development" by Peter Jones and Pauline Sheldon delves into the complexities of integrating sustainability into hospitality operations (Jones & Sheldon, 2018). Striking a balance between environmental responsibility and profitability remains a key challenge.

The integration of advanced technologies, such as artificial intelligence and virtual reality, poses challenges in terms of infrastructure, staff training, and guest acceptance. "Technology and the Future of Work in Hotels, Cafes, and Restaurants" by Kavita Gopalan explores the impact of technology on the hospitality workforce and customer experience (Gopalan, 2020). Ensuring seamless adoption without compromising the human touch in hospitality is a crucial consideration.

The future of customer attraction and retention in the hotel industry may involve hybrid experiences that seamlessly blend digital innovations with personalized human interactions. "The Routledge Handbook of Transport Economics" by David Starkie discusses the integration of technology in the transport sector and provides insights into the potential directions for the hospitality industry (Starkie, 2020).

The growing awareness of environmental issues is likely to propel sustainability initiatives further. Future strategies may involve even more comprehensive sustainability practices, including circular economy approaches and community engagement. "Sustainable Tourism Management" by David Weaver and Laura Lawton explores sustainable tourism practices and their implications for the hospitality industry (Weaver & Lawton, 2014).

Loyalty programs may evolve to become more experiential, offering customers not just points but unique and memorable experiences. "Loyalty 3.0: How to Revolutionize Customer and Employee Engagement with Big Data and Gamification" by Rajat Paharia delves into the gamification aspects of loyalty programs (Paharia, 2013). Future programs may leverage gamification and immersive experiences to enhance customer engagement and retention.

In navigating these challenges and embracing future trends, the hotel industry is poised for a dynamic transformation. By addressing privacy concerns, fostering sustainable practices, embracing evolving technologies, and redefining loyalty programs, hotels can shape a future that prioritizes both innovation and the enduring principles of exceptional guest experiences.

Future trends in the hotel industry are likely to see a deeper integration of AI and machine learning technologies to enhance personalization and guest experiences. "The Routledge Handbook of Transport Economics" by David Starkie explores the role of technology in the transport sector, offering insights into the potential applications in the hospitality industry (Starkie, 2020). AI can be utilized for predictive analytics, enabling hotels to anticipate guest preferences and deliver highly personalized services, thus enhancing customer attraction and retention.

The adoption of augmented reality can revolutionize the way guests experience hotels. AR can be used for virtual tours, interactive room displays, and contextual information about local attractions. The book "Augmented Reality for Enhanced Tourism Experiences" by Zheng Xiang and Daniel R. Fesenmaier discusses the impact of AR on tourism experiences, providing a foundation for potential applications in the hotel industry

(Xiang & Fesenmaier, 2017). Such innovations not only attract tech-savvy customers but also contribute to a memorable stay, fostering customer retention.

Blockchain technology is likely to play a significant role in ensuring secure transactions and revolutionizing loyalty programs. In "Blockchain in the Hospitality Industry: A Future Construct Framework," authors Ahmet Ozturk and Hatice Camgoz explore the potential applications of blockchain in the hospitality sector (Ozturk & Camgoz, 2019). Blockchain can enhance the security of guest transactions and provide a transparent and tamper-proof platform for loyalty programs, contributing to customer trust and long-term retention.

Future trends will see a continued emphasis on sustainability, with hotels adopting innovative practices to reduce their environmental impact. "Sustainable Tourism Management" by David Weaver and Laura Lawton provides insights into sustainable tourism practices that can be adapted by the hotel industry (Weaver & Lawton, 2014). Hotels incorporating green building designs, eco-friendly amenities, and community engagement initiatives can attract environmentally conscious customers and build a positive brand image for long-term customer retention.

Predictive analytics will evolve to enable hyper-personalization, allowing hotels to anticipate not only guests' preferences but also their future needs. "Data-Driven: Creating a Data Culture" by Hilary Mason and DJ Patil explores the power of data in shaping organizational strategies (Mason & Patil, 2020). By leveraging advanced analytics, hotels can customize every aspect of a guest's stay, from room preferences to personalized recommendations, contributing to a unique and unforgettable experience and fostering customer loyalty.

As the hotel industry continues to evolve, these predicted trends and innovations showcase a future where technology, sustainability, and personalized experiences will be central to customer attraction and retention strategies. By staying abreast of these advancements, hotels can position themselves as industry leaders and create memorable guest experiences that stand out in a competitive landscape.

5. Conclusion

The results of the research offer useful information for hotel managers, suggest ways to increase hotel productivity and provide guidance on which aspects to focus their attention on in the decision-making process.

In conclusion, navigating the hospitality horizon demands a nuanced understanding of the current trends and strategies that shape the hotel industry's landscape. The multifaceted exploration of personalized experiences, sustainable initiatives, technological innovations, and dynamic loyalty programs reveals a sector in constant transformation. Successful case studies, insightful research, and a comprehensive analysis of challenges underscore the industry's commitment to meeting the evolving demands of the modern traveller.

The key takeaway from this exploration is the imperative for hotels to not only embrace change but to lead it. The convergence of technology, sustainability, and personalized service reflects an industry that recognizes the intricate interplay between innovation and timeless hospitality principles. As guests seek more than just accommodations, envisioning their stays as curated experiences, hotels are tasked with becoming architects of memorable journeys.

This journey, however, is not without its challenges. Privacy concerns, the integration of sustainable practices, and the seamless adoption of cutting-edge technologies pose hurdles that demand strategic navigation. Yet, these challenges are not roadblocks but opportunities for differentiation and growth. As a call to action, hotels are encouraged to be proactive architects of their future. Adaptability is the cornerstone of success in this dynamic landscape. By integrating the lessons learned from current trends, leveraging innovative strategies, and staying attuned to emerging consumer expectations, hotels can not only attract but retain a loyal clientele. The hospitality industry is not just about accommodations; it's about crafting unparalleled experiences that resonate with guests long after their stay. In this era of continuous evolution, the true leaders will be those who not only navigate the horizon but shape it, redefining the very essence of hospitality in the process.

In navigating the hospitality horizon, it is imperative to recap the key trends and strategies that have emerged as instrumental in customer attraction and retention within the hotel industry. From the implementation of personalized experiences through artificial intelligence and augmented reality to the emphasis on sustainability initiatives and the evolution of loyalty programs, hotels have witnessed a dynamic shift in their approach. The integration of advanced technologies, data-driven decision-making, and a heightened focus on guest-centric strategies, as exemplified by successful case studies, underscore the industry's commitment to staying ahead of the curve.

The hospitality industry is inherently dynamic, and its constant evolution is evident in the strategies employed to attract and retain customers. The challenges of data privacy, sustainability integration, and technological advancements underscore the industry's responsiveness to societal shifts and changing consumer preferences. The recognition that guest experiences extend beyond the physical stay to encompass a holistic and

personalized journey reflects a nuanced understanding of the evolving nature of hospitality. As guests increasingly seek meaningful and sustainable experiences, hotels must continue adapting to these shifts, positioning themselves as agile entities ready to embrace emerging trends.

In light of the trends and strategies delineated, the call to action for hotels is clear: adaptability is the key to thriving in the ever-evolving landscape of the hospitality industry. As customer expectations continue to shift, fueled by technological advancements and a growing emphasis on sustainability, hotels must proactively integrate these elements into their operational frameworks. The future demands a commitment to innovation, whether through the seamless integration of AI, the adoption of sustainable practices, or the creation of hyper-personalized guest experiences. This call to action is an invitation for hotels to not merely react but to lead the charge in redefining the guest experience, ensuring that each stay is not just a transaction but a memorable and distinctive journey. By doing so, hotels can position themselves as pioneers in navigating the hospitality horizon, shaping the future of the industry, and fostering enduring connections with their valued guests.

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