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Radovan Savov • Jana Kozáková et al.

Craft Beer Revolution: Factors, impacts and perspectives of craft breweries development in Slovakia

Reviewed Proceedings of the
International Scientific Conference
Nitra, November 23rd 2023



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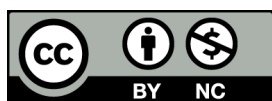
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Preface

In recent years, the global beer industry has changed a lot. Transformation of brewing sector, characterized by emerging trend of craft breweries has led to a craft beer revolution. This phenomenon has introduced a new era of craft brewing, innovation, connected with local preferences. Slovakia is country also known for its beer culture, has also embraced this craft beer revolution. This conference proceeding is focused on the factors, impacts, and perspectives of craft breweries development and try to offer exploration of brewing industry in a country known for its rich beer heritage.

The craft beer represents a movement from mass production and homogenized beers to a range of diversified beers that include unique ingredients and regional identity. Demand for authenticity should be named as an important factor of craft breweries growth because consumers are looking for new tastes and stories connected with originality of the beer. Craft breweries in Slovakia has started to response to this trend and produce innovative types of beers. Therefore, connection between craft brewers and consumers is a critical topic in the craft beer revolution. The topic of craft beer thus became interesting for the scientific community as well. Many researchers focus their research and publications on craft beer, especially from a technological, sensory, market, customer and economic point of view. That is why the research team at the Faculty of Economics and Management on the Slovak University of Agriculture in Nitra began to focus its attention on the development of craft brewing in Slovakia and investigated the causes and effects of the development. The topics of customer preferences, segmentation, but also the application of CSR in breweries resonate within the publications of the research team.

The presented publication is the output of the conference, which was realized within the project **VEGA 1-0525/21 Craft Beer Revolution: Factors, impacts and perspectives of craft breweries development in Slovakia, financed by The Ministry of Education, Science, Research and Sport of the Slovak Republic**. The publication reflects on the current development in the field of craft brewing and summarizes the interesting findings of the research team, but also of several authors devoted to the issue of craft brewing in Slovakia and abroad. In this way, I express my thanks and admiration to all contributors of articles to the proceeding, reviewers, and the scientific and organizational committee of the conference, and especially to all members of the research team of the mentioned project. We believe that this publication will help to clarify certain facts of the development of craft brewing and at the same time contribute to solving other similar topics in the community of scientific workers.

doc. Ing. Radovan Savov, PhD.
Chief researcher of the VEGA 1-0525/21 project

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Mapping the Craft Beer Research Landscape: A Bibliometric Analysis

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Abstract

The aim of this work is to point out specific parameters of craft beer industry widely used in scientific publications. The research is based on data provided in a form of downloaded Scopus publications which have a focus on craft beer. 926 publications were selected and were subjected to bibliographic analysis using VOSviewer software. The findings point to comprehensive research possibilities in the field of craft beer, the current publication focus by country, or even show how publication sources orient their research. This gives us added value, when the very process of research using bibliographic analysis estimates not only the current trend and status, but also points to the possibilities of brainstorming or topics that can be explored in more depth in the future. We have also achieved an overview of two clusters, where one points to the process of craft beer creation and the other to chemical and health components.

Keywords: craft beer, bibliometric analyses, business, cluster

JEL Classification: C87, L66, R1

1. Introduction

In recent decades, there have been many changes to the brewing sector. The era of opening new, tiny, local breweries followed globalization, which led to the purchase of breweries by international corporations. The brewing business has benefited greatly from globalization, particularly from resource concentration, which has increased productivity and efficiency. Conversely, numerous acquisitions and industry consolidation resulted in small, uncompetitive breweries going bankrupt or closing (Morgan et al., 2020). As a result of globalization, the three biggest brewing companies—AB InBev, Heineken, and Carlsberg—account for around half of the world's beer production (Pokrivčák et al., 2019). Another unfavorable tendency of globalization could be the considerable decline in beer consumption brought on by the product's unification and the subsequent reduction in the variety of beers available (Clemonts et al., 2006). This is the reason that later on there was a market for brand-new, tiny, neighborhood brewers known as "craft breweries." They began to provide a variety of beers that were tailored to individual palates. Even though these beers aren't cheap enough to compete with international corporations, they have gained, and continue to gain, a great deal of appeal with consumers. In particular, those seeking innovations and distinctive flavors and goods (Rivaroli et al., 2018). However, not only the possibilities of obtaining information and knowledge come in this direction, but above all, a large amount of information and data can be lost in such a huge number of publications. Therefore, it is sometimes important to use other means, especially of a software nature, in order to better obtain an overview and orientations in the current issue. Therefore, we try to use modern approaches to point out the simplicity of browsing information through software, and this also brings great opportunities for brainstorming or not overlooking interesting horizons. This is a bibliometric breakdown, or data analysis (Carvalho et al., 2018).

1.1 Bibliographic analyses

With the help of the available literature, it is possible to carry out a bibliometric analysis of the text using the Vosviewer software. Bibliometrics is the use of statistical methods to analyze books, articles, and other publications, especially for scientific content. Bibliometric methods are often used in the field of library and information science. Bibliometrics is closely related to scientometrics, i.e. the analysis of scientific metrics and indicators, to the extent that the two areas overlap to a large extent. Bibliometric studies first appeared at the end of the 19th century. They saw significant development after the Second World War in the context of the "periodic crisis" and the new technical possibilities offered by computing tools. In the early 1960s, Eugene Garfield's Science Citation Index and Derek John de Sollo Price's citation network analysis laid the foundation for a structured research program on bibliometrics. Many research fields use bibliometric methods to examine the impact of their field, the impact of a group of researchers, the impact of a particular article, or to identify particularly impressive works within a particular field of research. Bibliometric tools are commonly integrated into descriptive linguistics, thesaurus development, and reader usage assessment. Apart from specialized scientific use, popular web search engines, such as the pagerank algorithm implemented by Google, have been largely shaped by bibliometric methods and concepts. (Hicks et al., 2015; Van Eck and Waltman, 2017; Van Eck and Waltman, 2011; Van Eck and Waltman, 2010; Yu et al., 2020). The emergence of the web and the open science movement gradually changed the definition and purpose of "bibliometrics". In 2010, historical proprietary infrastructures for citation data such as Web of Science or Scopus were challenged by new initiatives in favor of open citation data. The Leiden Manifesto for Research Metrics (Hicks and et. al., 2015) opens a broad discussion on the use and transparency of metrics. Recent methodological shifts in the field are highlighted by the repositioning of some key journals, with the Journal of Infometrics becoming a quantitative scholar in 2019, for example.

Our partial goal is to use bibliographic analysis to examine individual connections and the strength of identifiers in the field of beer production, respectively in the field of craft beers. In this way, we will achieve results with the help of which we can derive, for example, the right questions for the purposes of questionnaire research, the creation of case studies, hypotheses or other important elements of scientific work. Another usefulness comes from several points such as:

- Visualization of Bibliometric Networks: To build and visualize bibliometric networks, use VOSviewer, a potent tool. These networks, which can be built on different interactions like citation, bibliographic coupling, co-citation, or co-authorship, can comprise journals, researchers, or individual articles. It is simpler to comprehend and analyse the data thanks to this visualization, which offers a clear and understandable representation of the relationships within the academic or research sector.
- Finding Important Researchers and Emerging Trends: Within a particular research community, VOSviewer can assist in locating important researchers, emerging trends, and significant participants. Co-authorship and co-citation networks can be analysed to identify persons and study topics that are becoming more well-known.
- Mapping Research Landscapes: VOSviewer is a tool that researchers and organizations can use to map the whole area of research. This is useful for monitoring collaborations, assessing the research output of various universities, and comprehending the thematic progression of research over time.
- Decision-Making and Funding Allocation: Universities, funding organizations, and governments can utilize VOSviewer's bibliometric analysis to make well-

informed choices regarding the distribution of funds for research. They can better distribute resources by recognizing productive researchers and important research fields.

- **Evaluating Research Impact:** By looking at citation networks, VOSviewer can assist in determining the influence of research outputs. For researchers to assess the impact and scope of their study, this is crucial.
- **Entire Bibliometric Maps:** VOSviewer is especially focused on graphical display, which simplifies the interpretation of even the largest bibliometric maps. For users who want to learn from large, intricate datasets, this is an essential capability. (Hicks et al., 2015; Van Eck and Waltman, 2017; Van Eck and Waltman, 2011; Van Eck and Waltman, 2010; Yu et al., 2020). In conclusion, VOSviewer is a useful tool for bibliometric analysis and visualization, although it has several drawbacks in terms of static displays, dataset complexity, parameter settings, and data quality.

2. Data and Methods

Research and academic disciplines frequently employ VOSviewer, a potent software tool for creating and visualizing bibliometric and scientometric networks. You can examine and display complex relationships—like co-authorship networks, keyword co-occurrence networks, and citation networks—within bibliographic data using VOSviewer. It is a useful tool for academics who want to comprehend the relationships between authors, keywords, and scientific publications, uncover new patterns, and get insights from scholarly literature since it provides capabilities like network clustering, mapping, color-coding, and data modification. Typically, VOSviewer is used to help in the study and evaluation of research landscapes by visualizing and interpreting the intricate web of information found in research publications. For our work purposes, 926 scopus publications were used, with a key search in the field of craft beers, specifying that the term must be repeated at least 10 times in each publication. The results were subjected to a 60% relevance coefficient (this percentage ratio is recommended by the software itself) and 2738 individual concepts and then clusters are based on this.

Preparation and analysis of inputs

In order to be able to use the VOSviewer software clearly and efficiently, it was necessary to modify our input data. The program itself has a problem with reading classic files such as Word or Excel output, so it was necessary to first obtain the necessary resource in csc format. Many Internet sources offer the possibility to download the publication for free. In this way, we managed to convert up to 926 scopus articles with a search focus on the craft beer segment. During the analysis, however, care had to be taken to ensure that unnecessary data were not included in the text, such as word designations: page, chapter, content, http and many others, which, due to their frequent occurrence in the text, incorrectly determine the result of the analysis. After removing these elements, analysis can be performed. Clear parameters are given during the analysis itself. We even tightened up the interface itself for our purposes. By default, the software stores word repetition with a value of 5, but we set a limit of 10 repetitions, which resulted in finding up to 2738 connection points out of a possible 110,201 terms. The relevance is set to 60% and we kept this limit, resulting in 3231 direct strongly connected investigation points. The visualization and individual results can be seen in the following graphs and tables.

3. Results and Discussion

We begin our results with an analysis of publications by country. We see that, for example, the USA and Italy are still working on this topic, but recently countries such as Brazil and Poland have been added. Results about countries publications and year appearance can be seen in Illustration 1. below. Numerous variables contribute to the abundance of research articles on craft beer coming from the USA, China, Italy, Brazil, and other nations. First, there's the Craft Beer Boom, a worldwide spike in popularity for craft beer. This has caused the craft beer movement in the USA to grow exponentially, creating a vibrant community of brewers and a concurrent surge in publications and research. Research and understanding of the craft beer sector and its potential for growth have naturally been prompted by the profound economic significance of these businesses, which contribute significantly to the economies of these nations.

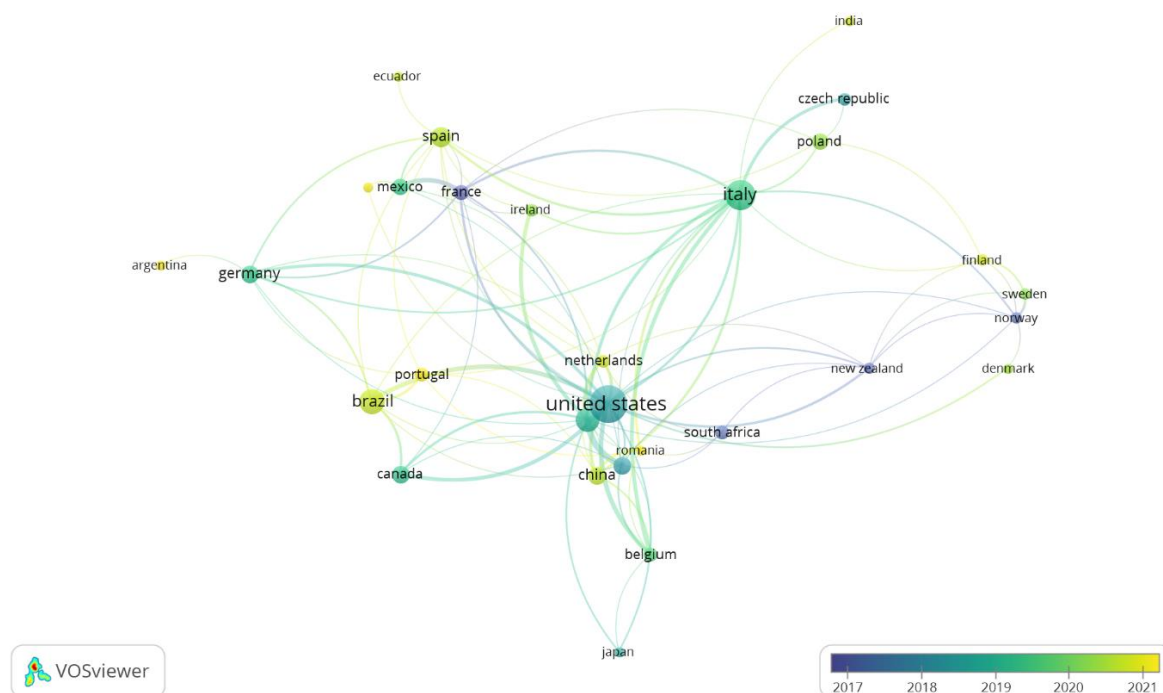


Illustration 1: Country and year analyses.
Source: own processing

Furthermore, craft beer has a noteworthy cultural significance since it embodies the customs and cultural history of these nations, drawing attention from historians and sociologists alike. Additionally, these nations' craft beer markets are very competitive, which stimulates innovation and research. To be competitive, brewers and researchers are always looking for novel tastes, brewing methods, and quality improvements. Additionally, as consumer interest in craft and artisanal goods has grown, so too has the need to comprehend the science underlying the creation of craft beer and the sensory elements involved in assessing various beer styles. Government Support: These countries' governments frequently sponsor research in a variety of industries, including brewing, to promote economic expansion, innovation, and quality assurance. This leads to an increase in research funding and publications. One contributing element to the increasing number of publications is international collaboration, as joint research projects involving several nations and institutions are conducted. Scholars from several countries collaborate to investigate different aspects of craft beer. In addition, craft breweries are important export markets and popular tourist destinations, which has

sparked interest in quality assurance, new product development, and advertising tactics. Lastly, the fact that these nations have university programs in the brewing and fermentation sciences inevitably results in the production of research in the area. To sum up, the growing number of scientific articles on craft beer in these nations may be attributed, in large part, to the convergence of economic, cultural, and market forces, as well as growing consumer interest and government backing.

Relevance score

The idea of relevance is when two topics are related in a way that makes it beneficial to take the second topic into account while examining the first. In our analyses we can see relevance score from our craft beer publications in Table 1.

Table 1: Relevance score

Term	Relevance score
Physicochemical parameter	2.68
Antioxidant capacity	2.26
Yeast strain	2.12
Control beer	2.12
Craft beers	2.08
Antioxidant activity	2.04
Beer tourism	1.87
Higher alcohol	1.82
Branding	1.80

Source: own processing

Several important phrases are highly relevant in the field of craft beer research, each of which illuminates a different part of this booming sector. "Physicochemical Parameter" (2.68), which covers a wide range of scientific measurements and analyses related to the physical and chemical characteristics of craft beer and is essential for production and quality control, is an essential resource. Likewise, "Antioxidant Capacity" (2.26), which serves as the basis for examining possible health advantages and general product quality, is quite significant. Given the crucial part yeast plays in brewing and its influence on flavour and features, "Yeast Strain" (2.12) is a term that is frequently used in research. For brewers, understanding the variations in yeast strains is essential. "Control Beer" (2.12), which is frequently used in tests to create a baseline for comparisons, is a point of reference that is crucial for experimental studies in the craft beer industry. The word "Craft Beers" (2.08), which is closely related to the main focus of craft beer study, is intrinsically relevant. Moreover, "Antioxidant Activity" (2.04), which echoes the importance of antioxidant capacity, is consistent with the emphasis on health and quality. The industry's rise as a tourist destination is reflected in the term "Beer Tourism" (1.87), and research is essential to comprehending its cultural and economic effects. Taking into account the different alcohol percentages seen in different craft beer varieties, "Higher Alcohol" (1.82) is another crucial factor. Last but not least, "Branding" (1.80) is essential to the promotion and sale of craft beer. Examining the ways in which branding affects customer decisions is an important area of research. Together, these relevance scores demonstrate the complexity of craft beer research, which includes both more general subjects like tourism, branding, and consumer preferences as well as more scientific aspects like yeast strains and physicochemical factors. Scholars and business experts explore these concepts to learn more about various facets of the creation, quality, and dynamics of the craft beer market.

Occurrence score

The quantity of times a word appears in a text or corpus is known as word frequency. It can be stated as the proportion of occurrences to the total number of words, or as an absolute frequency, which is the raw count of occurrences. In Table 2. is presented occurrence score.

Table 2: Occurrence score

Term	Occurrence score
Craft brewery	184
Industry	168
Beverage	116
Profile	114
Strategy	110
Yeast	101
Concentration	98
Fermentation	97
Hop	82

Source: own processing

Certain phrases frequently appear in the literature related to craft beer research, each of which adds to a complex understanding of this burgeoning business. The focal point of this scene is "Craft Brewery" (184), which explores brewing methods, product innovation, and the ever changing trends in the sector. On the other hand, "Industry" (168) takes a wider view, providing insights into the complex economic and commercial dynamics of the craft beer industry and examining its significant economic influence and changes in the market. In a more focused manner, "Beverage" (116) assumes a central role, encompassing craft beer within the larger category of beverages—a phrase that is commonly brought up when talking about the product itself. The seductive "Profile" (114) explores the fascinating realm of flavour and sensory attributes, a crucial factor that influences the caliber and taste preferences of craft brews. "Strategy" (110) puts craft breweries' strategic efforts front and center. It covers branding, distribution, and market positioning. "Yeast" (101) is a crucial study focus due to its fundamental role in brewing, which shapes the essence of fermentation and beer qualities. "Concentration" (98) breaks down the complex chemistry of beer by looking at the concentrations of elements such as alcohol and hop compounds, which are important for determining the beer's quality. The fundamental process of brewing, "fermentation" (97), reveals the techniques for creating a variety of beer varieties and attaining the right flavour profiles. The fragrant "Hop" (82) demonstrates its essential function in imparting taste and aroma to beer, inspiring a careful examination of hop cultivars, uses, and effects on the palate. To sum up, the recurrent appearance of these terms reflects the complex and multidimensional character of study on craft beer, which explores brewing methods, sensory analyses, and the complex dance of business tactics in the sector. Scholars and experts in the field set out on expeditions that embrace these concepts, revealing the intricate details of craft beer, its manufacturing process, and its function within the larger domains of drinks and economics.

Two unique clusters have been identified through research of craft beer publications, each of which sheds information on different facets of the craft beer industry. The initial cluster centers on the overarching subject of "Craft Beer in General." This cluster includes studies that cover every aspect of the craft beer market, including brewing methods, market trends, and the financial effects of craft beer. It gives a thorough analysis of the craft beer business and offers insights into its dynamics, growth, and importance in the beverage industry. "Profile of Craft Beer and Chemical Compounds," the second cluster, focuses on the

complex science underlying craft beer. The finer features of craft beer production, such as the chemical components that enhance its flavor, aroma, and quality, are the focus of this cluster. It breaks down the sensory elements, flavor profiles, and technical subtleties of brewing, with a focus on fermentation processes, yeast strains, hop compounds, and the concentration of essential ingredients in craft beer. Your work provides a more nuanced perspective of the craft beer research environment by separating these two clusters, providing both a broad overview of the sector and a detailed examination of its intricate scientific details. All this information are visually represented in Illustration 3.

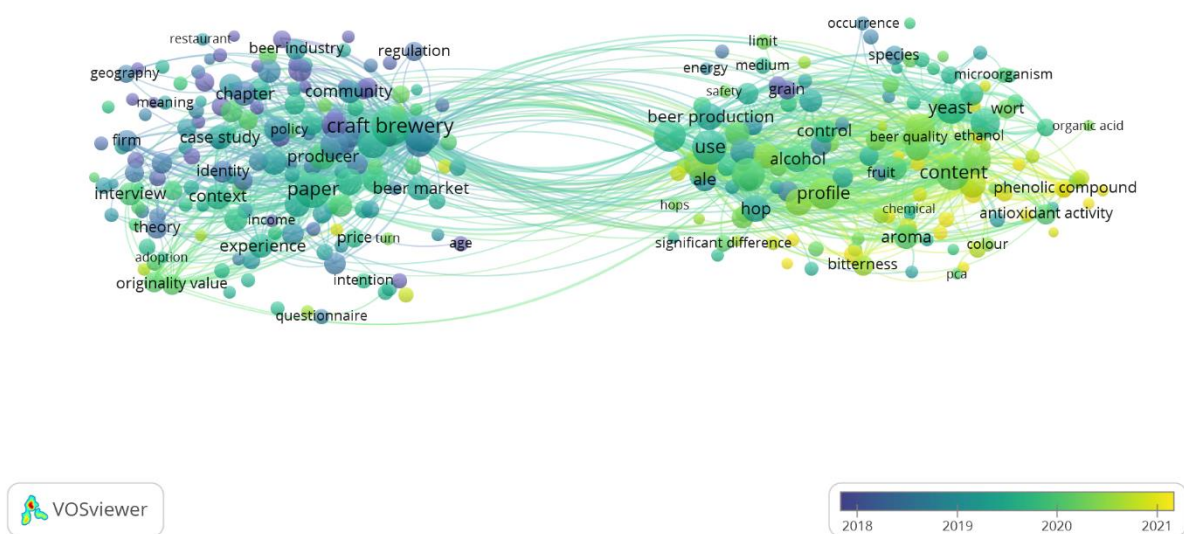


Illustration 2: Craft Beer in General and Profile of Craft Beer and Chemical Compounds clusters
Source: own processing

A confluence of critical elements can be responsible for the growing popularity of chemical components, beer characteristics, and health-related studies in scientific articles pertaining to craft beer. Customers are growing pickier and demanding as a result of craft beer's meteoric rise in popularity, and they're keen to discover the complex flavours and qualities of favourite brews. This change in consumer preferences has sparked a rush of research efforts in this area as people become increasingly interested in understanding the complex chemical composition and sensory aspects of craft beer. Simultaneously, brewer concerns have shifted to include quality assurance. Brewers are unwavering in their quest of continuously high quality for their products in an extremely competitive industry. Thorough examination of chemical constituents and beer profiles is essential for preserving the distinctiveness and superiority of craft beer, which is vital for differentiating them in the competitive market. In the world of craft beer, brewers are always coming up with new ways to innovate and set themselves apart from the competition. Research on chemical components and beer profiles provides the laboratory for creating new and unique beer styles, enabling craft breweries to entice customers with their unmatched concoctions. Concurrently, there's been a push to discover whether craft beer has any health benefits due to the increasing focus on wellness and health trends. Studies have been conducted to investigate the antioxidant characteristics of beer and its possible health effects, adding to

the growing corpus of information in this area. Customers are becoming more knowledgeable about the things they use, and scientific discoveries are increasingly influencing their decisions. Studies on the health benefits of craft beer not only broaden customers' understanding but also help them make well-informed decisions. Craft breweries must comprehend the complex chemical makeup of their goods in order to comply with regulations and maintain product quality. It is critical to follow strict guidelines and rules regarding food safety, labelling, and alcohol content. Additionally, a new era of cooperation has been ushered in by the dynamic synergy between academic academics and the craft beer sector, which has intensified research efforts in these areas even further. In order to improve their goods and learn more about the scientific nuances of brewing, breweries and scientists frequently collaborate closely. The craft beer industry is extremely competitive, and breweries are passionate about matching customer preferences with their products in order to obtain a competitive advantage. In this effort, research is essential since it promotes creativity and adaptability. Finally, the rapid progress in science combined with innovations in analytical methods and apparatus has made it easier than ever to analyse the chemical makeup of beer and its health benefits. The advancements in technology have sparked increased interest in these fields of study. As a result of the complex interactions between a number of variables, including consumer demand, quality assurance, innovation, health consciousness, education, regulatory compliance, teamwork, market dynamics, and the ongoing development of scientific methodologies, craft beer research has recently focused more on chemical compounds, beer profiles, and health-related topics. These aspects inspire both researchers and brewers, who work together to satisfy the constantly changing needs and tastes of craft beer consumers. In the following illustration 4. we present Craft Beer in General and Profile of Craft Beer and Chemical Compounds clusters in density visualization.

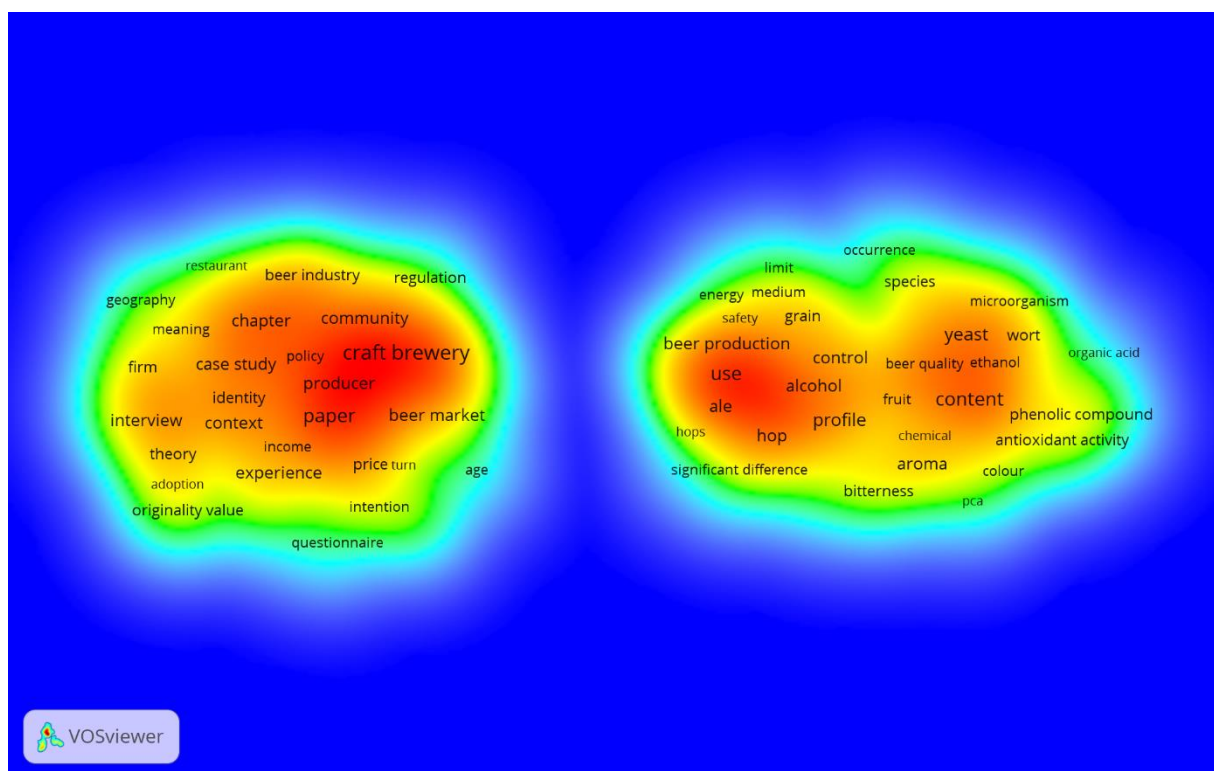


Illustration 3: Craft Beer in General and Profile of Craft Beer and Chemical Compounds clusters in density visualization. Source: own processing

4. Conclusion

In conclusion, a combination of causes can be blamed for the rise in publications about craft beer from nations like the USA, Italy, Brazil, and others. The USA's craft beer movement has experienced exponential expansion due to the Craft Beer Boom, which is fuelled by a global renaissance in craft beer popularity. This has resulted in a thriving community of brewers and a simultaneous increase in research and publications. Due to the craft beer industry's substantial economic impact on these countries, study and comprehension of the sector's growth potential have inevitably increased. Historians and sociologists are interested in craft beer because it reflects the customs and history of these countries and has substantial cultural weight, on the other hand business are looking for new and trendy experiences. The highly competitive craft beer markets in these countries encourage innovation and research since brewers and researchers are always looking for new flavours, ways to make beer, and ways to improve quality. Understanding the science underlying craft beer manufacturing and the sensory elements of beer evaluation is becoming increasingly important due to consumer interest in craft and artisanal products. A further factor contributing to the rise in scientific publications in these nations is academic programs in brewing and fermentation sciences, government backing, international collaboration, tourism, and export possibilities. Important terms like "Physicochemical Parameter," "Antioxidant Capacity," "Yeast Strain," "Control Beer," "Craft Beers," "Antioxidant Activity," "Beer Tourism," "Higher Alcohol," and "Branding" highlight the complex and diverse topics of craft beer research when it comes to relevance scores. Scholars and industry professionals examine these scores to obtain insights into various aspects of craft beer production, quality, and market dynamics. They represent the complexity of craft beer research, encompassing both scientific and general features. Furthermore, the occurrence score highlights the diverse character of craft beer study, exploring brewing techniques, sensory analysis, and commercial strategies. Terms like "Craft Brewery," "Industry," "Beverage," "Profile," "Strategy," "Yeast," "Concentration," "Fermentation," and "Hop" are among those that stand out. The presence of two discrete clusters within the research, one centering on "Craft Beer in General" and the other on the "Profile of Craft Beer and Chemical Compounds," highlights the variety of facets related to the craft beer sector that have been investigated through research. While the second cluster explores the technical nuances of craft beer production, focusing on chemical components, sensory factors, and brewing procedures, the first cluster offers a thorough overview of the industry, including market trends and economic consequences. A more detailed understanding of the state of craft beer research is made possible by this division. In sum, the emphasis on chemical compounds, beer profiles, and health-related topics in craft beer research is propelled by consumer demand, quality assurance, innovation, health trends, consumer education, regulatory compliance, collaboration, market competition, and scientific advancements. Researchers and brewers alike are driven by these factors to explore these aspects, meeting the evolving needs and preferences of craft beer enthusiasts..

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also declare that the work does not infringe on any copyrights, property rights of others including licenses and it is free from plagiarism.

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Craft Breweries Rising: Exploring the Evolution of the U.S. Brewery Industry

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Abstract

Study explores the historical trajectory of the U.S. brewery industry from the 19th century to 2022, analyzing patterns, growth dynamics, and transformations across different brewery categories. Data from the Brewers Association is dissected through graphs and tables, revealing trends in production, brewery counts, and openings/closings. The findings highlight the rise of craft breweries, regional brewery dominance, and challenges faced by microbreweries and taprooms. The industry's resilience and adaptability in the face of changing consumer preferences and external pressures are evident, setting the stage for a dynamic future.

Keywords: *U.S. brewery industry, Craft breweries, Brewery growth, Microbreweries, Taprooms*

JEL Classification: *L66, O30, Q13*

1. Introduction

The brewing industry in the U.S. has experienced a complex tapestry of growth, stabilization, decline, and resurgence over the years. This detailed examination reveals the multifaceted evolution of the beer landscape, spotlighting not just the sheer numbers but the intricate stories they tell. From the rise and dominance of regional breweries in craft beer production to the historical count of breweries dating back to the 19th century, the trends elucidate a nation's changing preferences and challenges faced by this industry. The more recent insights into categories of craft breweries highlight the vibrancy and adaptability of the craft segment, even as it navigates the intricate balance between saturation and innovation. The data on brewery openings and closings further emphasize the dynamism of this industry, showcasing its highs, lows, and eventual resilience. Dive in to explore these intricacies and decipher the intricate narratives intertwined with the American brewing legacy.

The popularity of breweries extends beyond the consumption of beer-based beverages, according to Savov and Szárková (2017), as the issue of alcoholic beverages has become a favored subject for scientific studies. In recent decades, the brewing industry has undergone significant changes, as observed by Savov and Szárková (2017). Craft brewing in the United States experienced a period of substantial growth, especially in the 1980s and 1990s. This

growth led to the opening of many breweries; however, paradoxically, many of them ceased to exist a few years later, as emphasized by Williams (2017). Particularly in the USA, brewery closures became a common trend due to the slowdown in the growth of craft brewing in the late 1990s, resulting in a decline of more than 10% in their numbers (Elzinga et al., 2015). Available data also indicates a decrease in beer consumption per capita in the USA since 1980 (Kunce 2023).

Results from the research conducted by Kerr et al. (2004) in the last century reveal that beer consumption tends to decrease linearly with age. However, a significant increase in consumption is observed among men from late adolescence to the early 20s. The most recent birth cohorts, especially those born between 1946 and 1965, exhibit higher beer consumption compared to older cohorts. In contrast, women's beer consumption shows positive trends in earlier cohorts and negative trends in more recent ones, with significant differences noted between cohorts before 1940 and after 1960. It is important to note the strong period effects on men's beer consumption, with surveys from 1979 and 1984 indicating significantly higher consumption compared to the 2000 survey.

Breweries that have developed in recent times were primarily part of corporate chains, as emphasized by Williams (2017). The brewing industry serves as an example of a different trajectory from the long-term trend towards the consolidation of the production of uniform beer and undifferentiated products, as argued by Clemons et al. (2006). In recent times, many small independent breweries have been acquired by large corporations, securing a market share in the growing interest in craft beer (Morgan et al., 2020). Surveys among beer consumers have revealed that individuals with higher incomes more frequently prefer craft beer (Pokrivčák et al., 2019). Studies also suggest that states with a larger population aged 20 to 35, which is predominantly white, without religious affiliation, and with above-average incomes, lean towards quality beer in smaller quantities. Small brewery entrepreneurs are actively pursuing the favor of this demographic group in the hope of gaining a share in the declining market dominance of large breweries (Kunce 2023). Surveys also show that millennials perceive small breweries as authentic and higher quality, products that align more with their cultural values (Yue, 2019). Entrepreneurs and enthusiastic local brewers continue to establish thousands of small breweries, hoping to maintain their share in the face of the dominance of large breweries. New participants in this industry are aware of the shift in beer consumer preferences and the long-standing acceptance of small breweries and their subculture (Kunce 2023).

2. Data and Methods

The primary objective of our research was to delve into the patterns, growth dynamics, and transformations of the U.S. brewery industry, tracing its journey from the 19th century through to 2022. In achieving this, we meticulously gathered data from the Brewers Association, paying particular attention to historical records that span the aforementioned timeframe. Once this foundational data was in hand, it was segmented into distinct categories, including brewpubs, microbreweries, regional breweries, and large or non-craft breweries. This categorization facilitated a nuanced understanding of growth patterns, enabling us to identify specific periods marked by either pronounced growth or noticeable decline. Moreover, by drawing parallels between the trajectories of the different brewery segments, we unearthed patterns and disparities that would otherwise remain concealed.

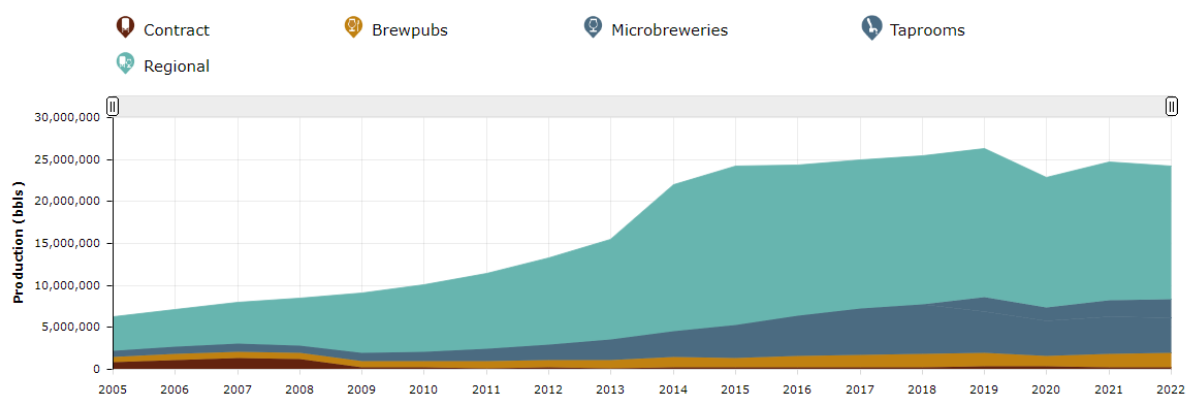
To ensure precision in data interpretation and trend recognition, we harnessed the capabilities of advanced statistical software. Additionally, the data was rendered visually using bar graphs, pie charts, and line graphs, thus aiding in the discernment of underlying patterns. The insights gleaned from these representations were further enriched by delving

into archived publications, industry reports, and prior studies that provided historical context.

However, like any study, ours too was accompanied by certain limitations. The insights are bound by a temporal limitation, confined to data available until 2022. Additionally, being heavily reliant on the Brewers Association for data, we acknowledge potential biases or discrepancies in their data accumulation practices which could affect our conclusions. Efforts were undoubtedly made to incorporate external factors that might influence brewery industry trajectories, but capturing all external nuances remains a challenge. Furthermore, defining breweries (like distinguishing between microbreweries and regional breweries) might introduce inherent biases depending on the definitions embraced.

3. Results and Discussion

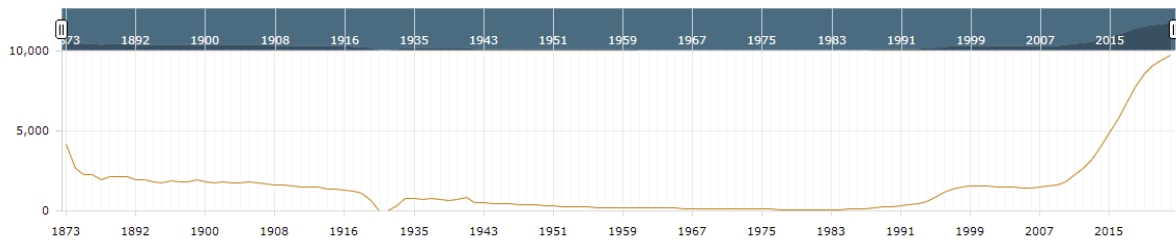
The U.S. brewery industry, with its rich and varied history, has been a focal point of changing consumer tastes, economic fluctuations, and the evolution of craft beer culture. Over different periods, the industry has witnessed growth spurts, periods of stability, and moments of decline. The given data, sourced from the Brewers Association in 2023, presents a comprehensive analysis of the industry's trajectory across various segments, including the count of breweries, production capacities, and opening and closing rates. This report will dissect the data from different graphs and tables, shedding light on the nuances of the brewery industry's journey from the 19th century to 2022.



Graph 1 Historical Craft Brewery Production by Category
Source: Brewers association, 2023

The graph 1 displays the production trends of various categories of craft breweries from the year 2005 to 2022. The production is measured in barrels, as indicated by the y-axis which ranges from 0 to 30,000,000 barrels. The x-axis represents the years. The Contract Breweries are represented by a light teal shade, this category starts off with negligible production in 2005, and there's no significant change observed throughout the entire timeframe. Brewpubs are enoted in dark blue, the production for brewpubs remains fairly constant throughout, although it's relatively small compared to the other categories. Microbreweries is shown in a deep teal shade, the production of microbreweries appears to be consistent in the early years but begins to witness a slight rise starting from around 2015. Taprooms is category is represented in gray. It is not distinguishable in the graph, indicating its production values might be negligible or merged with other categories. Regional Breweries are the most prominent category in the graph, regional breweries, are represented by the largest shaded area in sea green. Starting from a moderate production in 2005, there's a steady and significant increase in their production, reaching its peak in 2022. Overall, the graph depicts a dominant and growing presence of regional breweries in craft beer production from 2005

to 2022. The other categories, while present, do not showcase the same level of growth during this period.

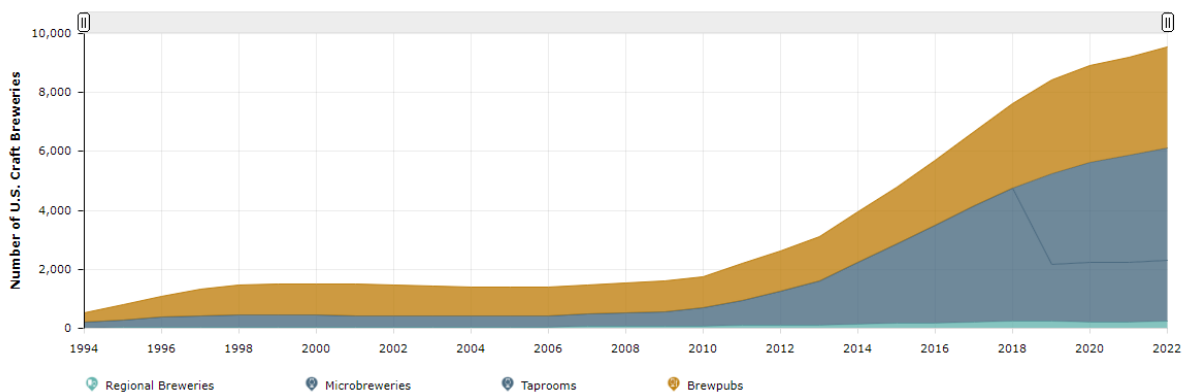


Graph 2 Historical U.S. Brewery Count
Source: Brewers association, 2023

Graph 2 illustrates the "Historical U.S. Brewery Count" from the year 1873 to 2015. The y-axis represents the number of breweries, ranging from 0 to 10,000, while the x-axis depicts the timeline in years. The timeline can be divided into 3 periods:

- Initial Decline (1873-1900): Starting from 1873, there is a noticeable decrease in the number of breweries, dipping significantly around the 1900 mark.
- Stabilization (1900-1983): From the early 1900s until approximately the early 1980s, the number of breweries stabilizes, remaining relatively flat and low. This prolonged period suggests a lack of growth or significant change in the number of breweries in the U.S.
- Dramatic Increase (1983-2015): Around the early 1980s, there is a slight uptick which becomes more pronounced post-1991. The number of breweries starts increasing at a faster pace from the late 1990s, with the growth accelerating substantially after 2007. By 2015, the count reaches close to 10,000, marking a significant resurgence in the number of breweries in the U.S.

In summary, after a decline in the late 19th century and a long period of stability throughout most of the 20th century, the U.S. saw a remarkable growth in the number of breweries starting from the late 20th century into the 21st century, culminating in nearly 10,000 breweries by 2015.



Graph 3 U.S. Craft Brewery Count by Category
Source: Brewers association, 2023

The graph 3 depicts the "U.S. Craft Brewery Count by Category" from 1994 to 2022. The graph breaks down the craft brewery count into four distinct categories, each represented by a different color. Regional Breweries are represented by a brownish shade, the count for

regional breweries starts off modestly in 1994 and maintains a gentle, almost flat trajectory until around 2006. After this point, there's a steady but moderate growth up to 2022. Microbreweries are in a golden hue, microbreweries show the most prominent growth in the graph. Starting off at a similar count to regional breweries in 1994, their numbers steadily increase, becoming more pronounced from around 2006 and shooting up rapidly after 2010. By 2022, microbreweries account for the majority of craft breweries in the U.S. Taprooms are denoted in a deep blue shade, taprooms make their noticeable appearance around 2010. From there, their numbers increase significantly, especially after 2016, representing a substantial segment by 2022. Brewpubs are represented in a grayish-blue hue, brewpubs follow a trajectory somewhat similar to regional breweries but with a more pronounced growth. Starting modestly in 1994, there's a gentle incline until around 2006, followed by a steeper growth, especially after 2010. By 2022, brewpubs form a significant portion of the craft breweries, though they are outnumbered by microbreweries and taprooms. The U.S. craft brewery landscape witnessed a considerable expansion from 1994 to 2022. Microbreweries lead in numbers, followed closely by taprooms and brewpubs, while regional breweries show the least growth. The post-2010 era, in particular, marked rapid growth across categories, especially for microbreweries and taprooms.

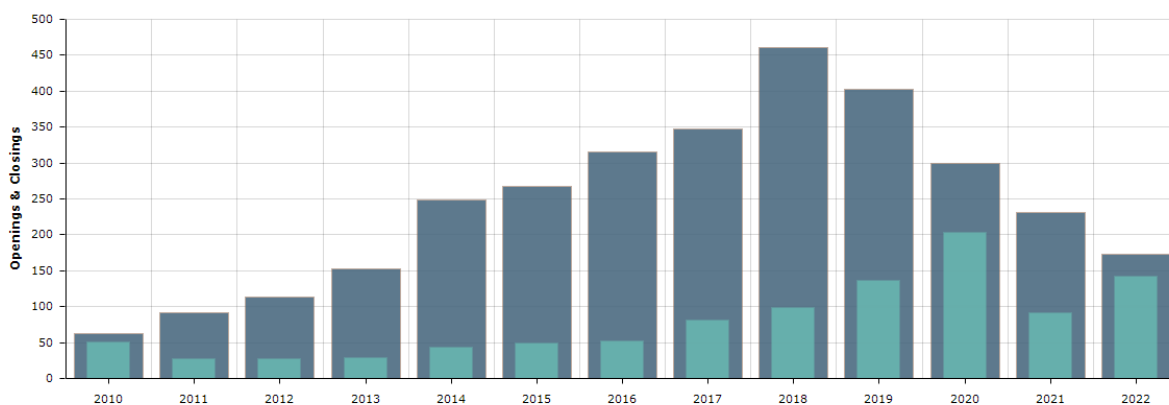
	2015	2016	2017	2018	2019	2020	2021	2022	2021 to 2022 % Change
Craft	4,803	5,713	6,661	7,618	8,419	8,921	9,210	9,552	3.7%
Regional Craft Breweries	178	186	202	230	240	220	223	261	17.0%
Microbreweries	2,684	3,319	3,956	4,518	1,917	2,003	2,007	2,035	1.4%
Taprooms					3,091	3,389	3,643	3,838	5.3%
Brewpubs	1,941	2,208	2,503	2,870	3,171	3,309	3,337	3,418	2.4%
Large/Non-Craft	44	67	106	107	138	171	174	157	-9.8%
Total U.S. Breweries	4,847	5,780	6,767	7,725	8,557	9,092	9,384	9,709	3.5%

Table 1 U.S. Craft Brewery Count by Category
Source: Brewers association, 2023

The U.S. brewing industry has seen intriguing trends between 2015 and 2022. The overall landscape (Table 1) reflects a consistent growth in the number of breweries, with the count starting at 4,847 in 2015 and reaching 9,709 by 2022. This growth, amounting to a 3.5% increase just between 2021 and 2022, underscores the rising popularity and the resilience of the brewery industry. Diving deeper into the categories, Craft breweries have made a notable imprint, starting at 4,803 establishments in 2015 and growing to 9,552 by 2022. This segment experienced a steady ascent, with a 3.7% hike from 2021 to 2022, suggesting a burgeoning interest in craft beers among consumers. However, the standout performer in this period has been the Regional Craft Breweries. They've marked a significant rise, especially with a striking 17% growth rate from 2021 to 2022. This remarkable growth might hint at a shift in consumer preference towards more localized and unique beer flavors, or perhaps a reflection of regional breweries expanding their outreach.

Microbreweries, although experiencing a growth from 2,684 in 2015 to 2,035 in 2022, saw a puzzling dip between 2018 and 2019. This sharp decline from 4,518 to 1,917 within a year warrants further exploration. Factors could range from market saturation, changes in consumer preference, to possible industry regulations or external economic conditions. Taprooms, despite missing data for the early years, have displayed a robust growth trajectory from 2019 onwards. Their count elevated from 3,091 in 2019 to 3,838 by 2022, marking a 5.3% increase from 2021 to 2022 alone. This might be indicative of a growing trend where consumers are seeking more immersive and direct experiences with breweries. Brewpubs,

establishments that brew beer on-site and serve it alongside food, have consistently grown in number, starting from 1,941 in 2015 to 3,418 in 2022, with a decent 2.4% growth in the last year. This combined experience of dining and freshly brewed beer appears to be a format resonating with the public. However, Large or Non-Craft Breweries seem to be facing headwinds. They've shown a negative growth rate of -9.8% between 2021 and 2022. The decrease suggests a possible waning interest in mass-produced beers or challenges faced by larger breweries in adapting to rapidly changing market dynamics. In essence, the U.S. brewery industry's trajectory from 2015 to 2022 paints a picture of a market leaning more towards personalized, localized, and unique beer experiences. As tastes evolve and the industry adjusts, it would be intriguing to witness the next phase of growth and transformation in the American beer landscape.



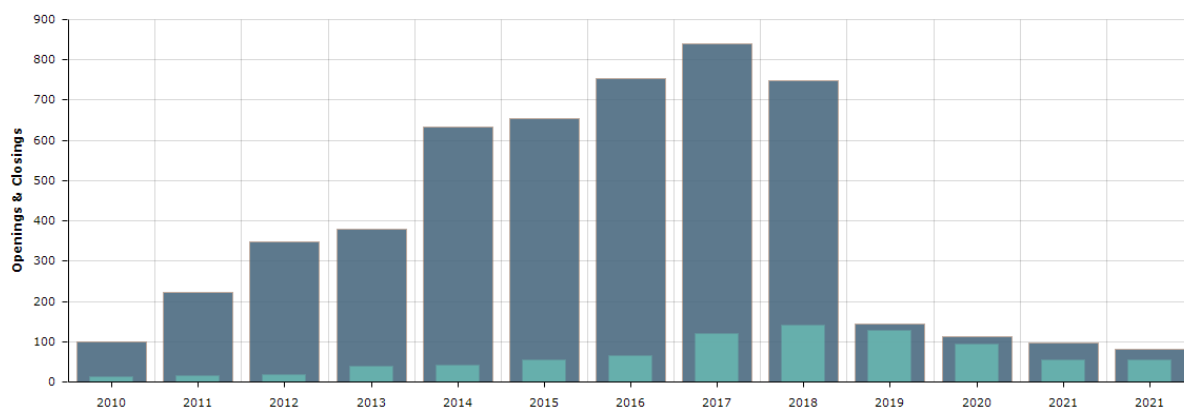
Graph 4 Brewpub Openings and Closings
Source: Brewers association, 2023

From Graph 4, it's evident that the industry has witnessed considerable fluctuation over the period. However, a few patterns and significant points can be distilled in four periods:

- Initial Growth (2010-2016): Starting from 2010, there was a steady rise in the number of brewpub openings. The industry seemed to gain momentum, peaking in 2016 with the highest number of openings, slightly above 450.
- Stable Openings with Increased Closings (2017-2019): Post-2016, while the number of openings remained relatively stable around the 400 mark, there's a discernible increase in the number of closings. This suggests that while new brewpubs continued to emerge, a significant number struggled to sustain, leading to increased closures.
- Decline in 2020: The year 2020 marked a pronounced drop in both openings and closings. Openings dipped below 300, and closings were just a tad above 150. This decline might be attributable to the global pandemic and the ensuing economic challenges, which would have deterred potential entrepreneurs from starting new ventures and led to a decrease in closings due to fewer new entries in the preceding years.
- Recovery and Resilience (2021-2022): The subsequent years, 2021 and 2022, indicate a recovery in the number of openings, albeit not to the previous highs. Closings also saw an uptick but remained below the 2019 levels. This suggests that while the industry started bouncing back, there's still a degree of caution or market saturation preventing a full return to the boom years.

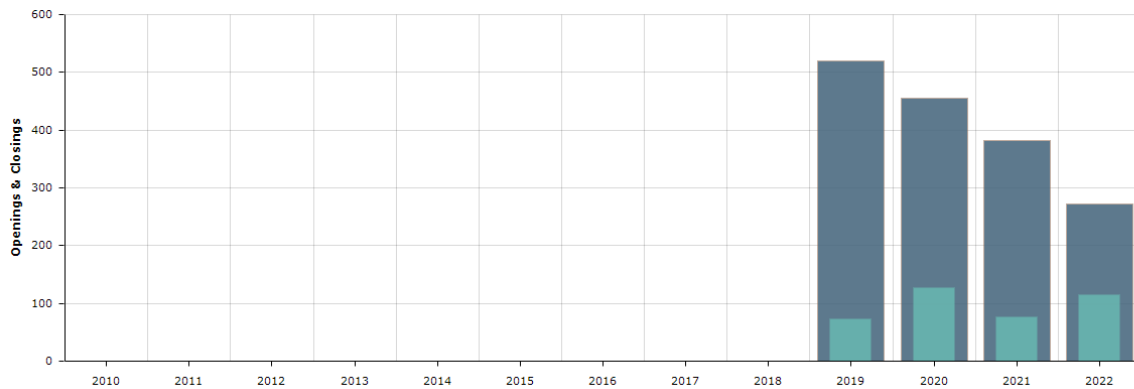
In summary, the brewpub industry from 2010 to 2022 showcases an initial period of growth, a phase of stabilization with increased competition leading to more closures, a sharp decline

possibly due to external challenges like the pandemic, and then a period of cautious recovery. The dynamics underscore the brewpub industry's resilience, adaptability, and the ever-evolving challenges and opportunities it faces.



Graph 5 Micro Openings and Closings
Source: Brewers association, 2023

The Graph 5 provides a detailed depiction of the rise and fall of Microbrewery Openings and Closings from 2010 to 2021, revealing deeper insights into the industry's dynamics over a span of more than a decade. Initial Flourishing (2010-2014) was the decade commenced with a rather modest presence of microbreweries, with the number of openings floating around the lower 100s in 2010. As we progress through the years, a budding enthusiasm for craft beers and localized brews becomes evident. By 2014, this enthusiasm translates into a more robust presence, nearly tripling the number of openings since the start of the decade. The modest number of closings during these years indicates that the industry found a receptive audience, and the market was far from saturated. Next, Golden Era of Growth (2015-2018) was from 2015 onward, the microbrewery industry truly begins its ascent. The number of openings peaks, notably around 2018, approaching a staggering 800 establishments. This phase can be seen as the 'Golden Era' for microbreweries, driven possibly by a mix of consumer trends favoring artisanal and local produce, greater investor interest, and the communal and experiential aspects microbreweries brought to the table. However, despite the blooming openings, 2018 also witnesses a higher number of closings than previous years, hinting at the beginnings of market pressures. After, the Turning Tides (2019-2021) starts post-2018, there's a discernible shift in the landscape. The opening of new microbreweries begins to slow down, while the closures become more prominent, especially in 2019 and 2020. Several factors might contribute to this transition. Perhaps the market reached a point of saturation, with too many players vying for a piece of the pie. External economic challenges, evolving consumer preferences, or even global events affecting the hospitality and leisure sectors could have played a part. The reduced gap between openings and closings in 2021, reaching the smallest difference since the early 2010s, underlines a time of introspection and recalibration for the industry.



Graph 6 Taproom Openings and Closings
Source: Brewers association, 2023

The graph 6 depicts the trends in Taproom Openings and Closings spanning from 2010 to 2022. During the initial years from 2010 to 2015, there was minimal activity in the taproom sector, indicating a subdued interest or possibly other limiting factors. However, the period between 2016 and 2018 marked a significant boom, with 2018 registering close to 500 new taproom openings. This surge might have been influenced by the rising popularity of craft beers or possible regulatory changes that favored such establishments. Contrastingly, a downturn was observed in the subsequent years, especially between 2019 and 2020. One potential reason for this decline could be the global challenges posed by the COVID-19 pandemic, which had widespread implications on various industries. Such a drastic reduction in new establishments, coupled with a consistent rate of closings, might indicate external pressures or market saturation. However, a silver lining can be seen in the years 2021 and 2022, where there was a slight but noticeable uptick in taproom openings. This suggests that, despite the challenges faced in the preceding years, the taproom industry displayed resilience. It might be on a path to recovery, adapting to the changing socio-economic landscape. The persistent rate of closures post-2016, on the other hand, suggests a competitive environment, where only establishments that can adapt and innovate can thrive. In conclusion, the taproom industry, as visualized by the graph, has seen its highs and lows but appears to be navigating its way forward with cautious optimism.

4. Conclusion

The U.S. brewery industry is a mirror to the dynamic and evolving tastes of its consumers. From the early days of brewery counts in the late 19th century to the modern era's craft beer revolution, the industry has constantly adapted. The historical data suggests a noticeable decline in traditional large or non-craft breweries, hinting at a shifting preference towards more artisanal and localized brewing experiences. Craft breweries, especially regional ones, have seen tremendous growth, highlighting the consumers' evolving palate and desire for unique flavors.

Microbreweries and taprooms, despite facing market pressures and external challenges like global events, have showcased resilience. Their numbers and the growth trajectories underline the consumers' desire for immersive and community-based experiences. However, the industry is not without its challenges. The increasing number of closings in recent years, especially among microbreweries and brewpubs, indicates market saturation and the need for businesses to innovate and adapt to stay afloat.

In the light of the data, it's evident that the American beer landscape is in a state of flux. As consumer preferences continue to evolve, and as the industry grapples with external challenges, the coming years will be pivotal. Breweries, both old and new, will need to navigate this terrain with agility, innovation, and an ear to the ground, ensuring they remain attuned to their audience's ever-changing tastes.

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Author Declaration: We, the authors of the above-titled paper, hereby declare that the work included is original and is an outcome of the research carried out by us. Further, we declare that the work submitted has not been published already or is not under consideration for publication in any Journals/Conferences/Symposia/Seminars. We also declare that the work does not infringe on any copyrights or property rights of others, including licenses, and is free from plagiarism.

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Local breweries and their impact on regional identity: in-depth research in Galanta and Šaľa

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Abstract

In today's world where regional identities face the challenges of homogenization, we were interested in the relationship between the existence of local breweries and the formation and strengthening of regional identity. This in-depth study focused on the cities of Galanta and Šaľa, with the aim of understanding the relationship between the consumption of beer from local breweries and the perception and formation of residents' attachment to their geographical environment. Methodologically, we focused on sampling in cities with the existence or absence of local breweries. The survey results clearly confirmed that local beer consumption is related to regional identity. Residents of Galanta, where a local brewery is present, showed a higher level of attachment to the region compared to residents of Šaľa, where a local brewery is absent. Another interesting finding was that the group in Šaľa who a local brewery does not have achieved a similar level of regional identity as those who do not consume beer from the local brewery in Galanta. This result opens up a discussion on the influence of the absence of local breweries on the relationship to the region. In the final section, we suggest a direction for future research that could develop an understanding of the relationship between local breweries and regional identity. The overall contribution lies in a deeper understanding of the influence of local breweries on the formation and strengthening of regional identity in the contemporary social and cultural environment.

Keywords: Local brewery, Regional identity, Relation to the region

JEL Classification: L66; Z13; D12; R11.

1. Introduction

In a globalised world where cultures are mixing and regional identities are facing the challenges of homogenization, the question of the importance of local breweries in the creation and strengthening of regional identity is becoming crucial. Our study focusing on the cities of Galanta and Šaľa seeks to deeply understand how the consumption of beer from local breweries influences the perception and formation of regional identity in urban settings. Answering the questions of how the consumption of local beer can shape regional identity and what impact the existence of a local brewery in a city has on this perception are the aims of our in-depth analysis. We discuss whether and how these factors influence residents' attachment to their geographic environment.

Many studies have already discussed the impact of globalization on local cultures and identity (See: Tao, 2019; Jensen et al, 2011; Ergashev & Farxodjon, 2020) but fewer have explored in depth how local breweries may influence the way residents perceive and shape their regional identity (See: Schnell & Reese, 2003; Sjölander-Lindqvist et al. 2020).

Existing research often highlights that globalization can lead to a loss of uniqueness of regional identities due to the mass consumption of global products and cultural forms (Pieterse, 2019; Siregar, 2022). In contrast, our study focuses on the unique phenomenon of local breweries and their potential impact on strengthening residents' attachment to their geographic environment.

According to previous research, there is an association between the consumption of local products and a strengthened regional identity (Cvijanović, 2020; Schnell, 2003). However, no studies were available to us that examined this relationship in the context of local breweries in Slovakia. Our study seeks to fill this very gap, offering a deeper insight into how local breweries can be a key player in shaping and maintaining a unique regional identity.

Previous research has often emphasized the unilateral impact of consumption on regional identity, with less attention paid to cases where the existence of local breweries does not have an obvious impact. Our study therefore involves comparing cities with existing local breweries and those where these are absent, in order to discover nuances of influence and possible alternative factors that may affect perceptions of the region.

Given the growing importance of regional identity issues in the context of globalization, our research seeks to offer new insights into the dynamics between local breweries and residents' relationship to their region. Our findings could have important implications for local communities, business entities, and cultural institutions seeking to maintain and strengthen regional identity within today's rapidly changing world.

2. Data and Methods

Answering the questions of how the consumption of local beer can shape regional identity and what impact the existence of a local brewery in a city has on this perception are the aims of our in-depth analysis. We discuss whether and how these factors influence residents' attachment to their geographic environment.

2.1 Selection of the research sample

For this research we focused on the cities of Galanta and Šal'a in Slovakia. Both cities have similar characteristics, size, population composition, economy and are only 10 kilometres apart. However, there is one significant difference between them - Galanta has a local brewery, while Šal'a does not. Šal'a, on the other hand, has two pubs that specialise in serving beers from craft breweries. This fact balances the chances of both towns in that identity and economy could also flourish on the basis of networking, entrepreneurial opportunities, or the creation of relationships created by the consumption of craft beers. The most striking difference in light of our research is that it is possible to drink beer from Galanta in Galanta.

2.2 Data collection methods

To obtain more in-depth information, we implemented a questionnaire survey approach. The survey was conducted in the second quarter of 2022. The questions were not only about the consumption of local products, but also about the evaluation of the regional identity and the perception of the characteristics of the region.

Sample size:

This survey was part of a broader research mapping the influence of various factors on the strength and formation of regional identity. For our survey, we targeted a sample that included respondents from the cities of Galanta and Šal'a in Slovakia, which are relatively similar in many respects and are 10 kilometres apart.

To this end, we organized a survey with 3412 participants who volunteered to participate through an online questionnaire posted on various social media sites (Gordiienko-Mytrofanova, 2018; Allmark, 2004). The sample contained 3342 responses after cleaning. The most common reason for not including a response in the research was non-compliance in the control questions or abstinence.

Based on the method of recruiting participants, the selection of participants was a random process in which we did not directly influence the diversity of the sample in terms of age, gender, education, and geographic location (Chen, 2018). We collected demographic data, socioeconomic status, interests and opinions of the participants, among others, as part of the questionnaire. Based on this information, we were able to exclude all participants under the age of 18, as well as participants who were from locations other than the study sites, with respect to the research objective. The questionnaire was designed in the form of structured questions that addressed participants' opinions, attitudes and behaviours in the areas of interest. This approach allowed us to obtain specific and relevant information. Before starting to complete the questionnaire, participants were informed about the purpose of the research and the privacy of their data. We included respondents of different ages, educational backgrounds, and length of residence in the city. In collecting data, we sought to capture the diversity of residents in both cities and ensure that our sample was representative of the local community. Such differentiation provided us with a rich data set that allowed us to understand different perspectives in more detail and explore how different groups of residents respond to the existence of local breweries.

Categorization of respondents:

Responses were carefully categorized into several groups according to predefined criteria. We identified active residents who demonstrated a strong attachment to the region, as well as groups with less pronounced regional sentiment. We also considered factors such as age, education, and length of residence in the city.

Some of the Regional Identity questions included:

- How would you describe your relationship to the region in which you live?
- What local events or traditions are personally important to you?
- Do you see the distinctive features of your region as part of your personal identity?
- What steps would you take to promote the development of your region?
- If someone asks you where you are from, how will you answer?

Measuring regional identity:

Identifying and measuring regional identity was a key aspect of our methodology. Our definition of regional identity takes into account residents' attachment to their geographic region, which is manifested not only in their pride in where they live, but also in their active participation in local activities and the way they identify the region's distinctive features as part of their personal identity, as well as in many other aspects (Darázs, 2022). We asked

residents in detail about their relationship to the region and what values and features are important to them. The questions were structured to capture not only pride in where they live, but also participation in local social and cultural activities, perceptions of the region's characteristics, and commitment to its prosperity.

Evaluating Regional Identity:

We used a combination of qualitative and quantitative approaches to assess regional identity. Qualitative data was analyzed using thematic analysis, identifying recurring patterns and major themes. Quantitative data were analysed using statistical methods to compare levels of regional identity between different groups of respondents, particularly in relation to beer consumption and place of residence.

Hypotheses:

We formulated the following hypotheses to structure and analyse the level of regional identity in relation to local beer consumption:

Hypothesis 1 explained the influence of the existence of local beer on regional identity.

The null hypothesis (H0): there is no significant difference in the level of regional identity between residents of a city with a local brewery and those who do not have a local brewery in the city.

Alternative Hypothesis (H1): There is a significant difference in the level of regional identity between residents of a city with a local brewery and those who do not have a local brewery in the city.

Hypothesis 2 approximated the association between regional identity and consumption of local beer among Galanta residents who consume Galgan local beer.

Null Hypothesis (H0): There is no difference in regional identity between local beer consumers and residents who are not local beer consumers

Alternative hypothesis (H1) : There is no difference in regional identity between local beer consumers and non-local beer consumers

Hypothesis 3 tested the prediction that longer city residence would be positively correlated with higher regional identity among respondents with a preference for local beer consumption. We expected that participants with a longer stay would be less prone to homogenizing cultural influences and would tend to prefer local products, in this case local beer.

Null Hypothesis (H0): The null hypothesis predicts that there is no significant relationship between length of stay and level of regional identity and preference for local beer consumption.

Alternative Hypothesis (H1): The alternative hypothesis posits that longer city residence is positively related to higher regional identity and preference for local beer consumption. Participants with a longer stay are more likely to exhibit a stronger sense of belonging to the region and a preference for local products, especially local beer.

Analysis:

In our study, we chose to use the Kruskal-Wallis test to evaluate the statistical significance of differences between groups in our data. This choice was motivated by several important factors. One important prerequisite for using the Kruskal-Wallis test is the non-normality of the data. Our analysis showed that the data did not meet the assumption of a normal distribution, which is common in socioeconomic studies. The Kruskal-Wallis test is a nonparametric method, which means that it does not require precise specifications about the nature of the data distribution or about the values of the population parameters. This is important because our sample contained non-homogeneously distributed data. Our study also included multiple groups (residents of Galanta and Šala), and therefore we needed a tool that could account for and compare data between these groups.

The Kruskal-Wallis test consisted in comparing the values of regional identity between the residents of Galanta and Šala with respect to their relationship to the consumption of local beer. Based on our results, we identified statistically significant differences between the groups, providing support for our hypotheses regarding the relationship between local beer consumption (specifically Galgan beer) and regional identity. A final assessment of the information gathered was to look for differences through analysis of variance between short-stay and long-stay beer consumers.

3. Results

Our analysis has penetrated the relationship between the existence of local breweries and regional identity, yielding interesting insights.

3.1 The importance of local breweries in the formation of regional identity

A striking finding of our research was that residents of Galanta, where a local brewery exists, demonstrated a higher level of regional identity compared to residents of Šala, where such a brewery is absent. This association between the existence of a local brewery and a stronger regional identity highlights the key role that these breweries can play in shaping residents' attachment to their geographic environment. Based on these findings, we accept the alternative hypothesis and thus argue that there is a significant difference in the level of regional identity between residents of a city with a local brewery and those who do not have a local brewery in the city.

3.2 Alternative factors of influence on regional identity

An interesting observation was that the group of residents in Šal'a who do not have a local brewery achieved a similar level of regional identity as those who do not consume beer from the local brewery in Galanta. This finding opens the door to a broader understanding of the influence of various factors on the perception and formation of attachment to the region. It can be assumed that the absence of a local brewery in Šal'a does not necessarily imply a weakening of regional identity, and this could be linked to other communal or cultural aspects of the region.

3.3 Impact of local beer consumption on regional identity

Another finding that emerges from our analysis is the confirmation that consumers of local beer exhibit higher levels of regional identity compared to those who prefer other types of alcohol in Galanta. This supports the importance of local beer not only as a product, but also as a symbol that can reinforce the attachment of residents to their geographical environment.

3.4 Relationship between length of stay, regional identity and consumption of local beer

Based on a broader analysis of the data, we found that there is a positive correlation between longer stay and higher regional identity. Participants who live in a city longer report a stronger sense of belonging to the region. Moreover, we observed that this link has a significant impact on their consumption preferences.

In the case of local beer consumption, we confirmed that participants with higher regional identity are more likely to prefer local breweries and their products. However, we also found that immigrant consumers who consume local beer have higher levels of regional identity than respondents with similar length of residence but who do not consume local beer. This finding suggests a strong relationship between regional identity and support for local breweries.

However, it does not seem possible to clearly determine whether local beer creates regional identity or vice versa, and therefore we would argue that although these 2 factors may be 2 sides of the same coin, they deserve closer examination.

Our findings have provided insight into the complex relationship between local breweries and regional identity. The results suggest that the existence of local breweries can have a profound effect on shaping residents' attachment to their region, not only through beer consumption but also through social interactions and cultural expressions. This knowledge has the potential to influence not only local businesses but also social policies aimed at promoting regional identity and sustainable development.

3.5 Limitations of the results

When interpreting our findings and developing alternative hypotheses, it is important to consider several limitations that may affect the validity and broader generalizability of our results.

One of the main limitations of our research is the sample size and its representativeness. Our study was limited to two specific cities, Galanta and Šaľa, and hence we cannot directly extract the results to the whole population.

Respondents may have been prone to social desires to display a greater regional identity to meet the expectations or perceptions of the researchers. This factor may affect the reliability of our findings and should be considered when interpreting the results.

Our study focused on the moment and did not consider the temporal dimension of regional identity development. It is possible that the existence of local breweries may have different long-term effects that we could not fully assess in our short-term analysis.

The results of our research focus on the impact of local breweries on regional identity, but do not account for other possible factors that might influence this association. Differences in regional identity may be influenced not only by the existence of local breweries, but also by other factors. Further studies could further explore the complex web of factors that shape community identity.

Perhaps the most significant limitation of this study may be that, once the sample is large, some comparisons and relationships are found in a sample of fewer than 100 respondents (e.g., immigrant residents of Galanta with a preference for consuming local beer), which may make this study more.

4. Discussion

In discussing the importance of local breweries and their role in the formation of regional identity, various aspects can be opened up that could further enrich the article. Let us start from the economic side of things. Local breweries not only contribute to job creation but can also boost the local economy by supporting local suppliers of raw materials and attracting tourists. These factors could be key elements for the sustainable growth of the regions' identity. Next, we can examine the social aspect. How do local breweries integrate their activities into the community? Do they support cultural events, social initiatives or engage in local traditions? These elements may be key factors in creating attachment of residents to their region. However, let's not forget the challenges that local breweries may face. Competition with global brands, sustainability of the production process and environmental responsibility issues can be critical points to consider in a broader context. It is also important to take into account the views and expectations of the residents themselves. How do they perceive the presence of local breweries in their environment? What are their expectations and what impact do these breweries have on their daily lives? Their perspective can provide valuable information on how these businesses actually fit into the social fabric of the region. One possible explanation for the results obtained is the influence of community rituals in the environment of local breweries. These breweries often serve as social gathering places where townspeople can meet, share common interests, and participate in local traditions. The symbolic values associated with such rituals can reinforce a sense of belonging and pride in the local region. It should be pointed out that there is also an establishment in Šal'a where such events can take place over a glass of craft beer, but our thoughts focus on the fact that social events over a glass of local craft beer can increase social interaction in relation to regional identity more than social events over a glass of craft beer from another region.

We consider it important for future in-depth research to investigate the factors influencing the relationship between consumption of local products and regional identity. At the same time, we want to highlight the need for long-term follow-up of the impact of this relationship on social cohesion and the collective identity of local communities. When discussing the importance of local breweries, we should not overlook their social impact. Local breweries often serve as social gathering places where townspeople can come together, share common interests and participate in local traditions. The symbolic values associated with such rituals can reinforce a sense of belonging and pride in the local region.

The theme of regional identity and its reinforcement through breweries is a fascinating concept that opens up a discussion on the diversity of social and economic influences. Indeed, breweries can play a key role in fostering regional identity, not only by creating unique beers, but also through the synergies that are created in their surroundings.

One of the main elements to be explored is the relationship between breweries and the increase in visitor numbers. If a brewery produces exceptional beer, this can attract not only locals but also visitors from other regions and even from abroad. In this way, regional products, in this case beer, become carriers of culture and tradition, which contributes to strengthening regional identity. The synergistic effect that arises from increased visitation is significant. In addition to visiting the brewery itself, there is potential for the development of other sectors such as tourism, culture and gastronomy. Tourists who come for the exceptional beer can also discover other local attractions, thus contributing to the overall development of the region. Beer-related cultural events such as beer festivals can provide a platform to showcase local artists, music groups and traditional cuisine. However, it is also important to pay attention to the long-term impacts of this phenomenon. Increasing attendance can bring benefits, but it can also have negative consequences such as environmental problems, overcrowding or a change in local culture. It is essential that breweries and local authorities work together for sustainable development that takes into

account the needs of residents and the environment. Striking a balance between economic benefits and sustainable development can be a key aspect of the success of creating a regional identity through breweries.

We call for new research directions, with an emphasis on the social impacts of the existence of local breweries on a city's economic growth, cultural interactions, and local community development. We would also like to explore how these breweries can serve as catalysts for innovation in the local business environment, contributing to the overall dynamism and prosperity of the city.

5 Conclusion

In the context of today's globalized world, where regional identities face challenges of homogenization, our study was dedicated to a deeper understanding of the relationship between the existence of local breweries and the formation of regional identity. The results of our research showed that the consumption of local beer is strongly related to the strengthening of residents' attachment to their geographic environment.

In Galanta, where a local brewery is present, we observed a significantly higher level of regional identity compared to the residents of Šale, where such a brewery is absent. This confirms our assumption and supports the importance of local breweries as factors influencing regional identity.

Another interesting aspect of our findings was that the group of residents in Šala who a local brewery do not have achieved a similar level of regional identity as those who do not consume beer from a local brewery in Galanta. This suggests that the absence of a local brewery does not necessarily weaken regional identity and opens up space for an in-depth discussion of the influence of various factors on the perception and formation of attachment to the region.

In discussing the results, we reflected on possible explanations, highlighting the importance of community rituals in the setting of local breweries. In addition to beer consumption, these places also serve as centers of social gatherings where residents share interests and participate in local traditions. This social dimension can be a key factor in strengthening regional identity and creating attachment to the local region.

In calling for future research, we see the need to further explore the factors that influence the relationship between consumption of local products and regional identity. Analysing the social and economic impacts of the existence of local breweries on local communities could also be an important line of research. We believe that our work provides suggestions for further research in this area, in order to better understand the impact of local breweries on cultural and social aspects of the urban environment.

In the conclusion of this paper, it is evident that breweries have a huge potential to play a key role in strengthening regional identity. Their ability to create unique beers and attract visitors can act as a catalyst for the overall development of the region. However, it is imperative that we focus not only on the short-term benefits, but also on the long-term impact that this phenomenon can have on the community and the environment.

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Authors' Declaration : Author of the above titled paper hereby declare that the work included is original and is an outcome of the research carried out by the authors indicated in it. Further, I declare that the work submitted has not been published already or under consideration for publication in any Journals/Conferences/Symposia/Seminars. I also declare that the work does not infringe on any copyrights, property rights of others including licenses and it is free from plagiarism. It is important to emphasize that all data and information presented in this paper are publicly available upon request. If anyone would like more information, we are ready to provide the necessary data and supporting material. Transparency and data accessibility are core values for us, and we therefore strive to ensure that anyone who is interested has the opportunity to verify and check the fundamentals of our work. This statement is binding, and we are willing to cooperate with any questions or requests for additional information to facilitate verification of all aspects of the work outlined above.

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Brewing with Integrity: A Bibliometric Exploration of Business Ethics in Beer Production

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Abstract

The convergence of business ethics and beer production is a potent subject of inquiry in today's rapidly evolving global economy. As the beer industry burgeons, there emerges a compelling need to understand the ethical considerations that influence and shape its practices. This research offers a comprehensive exploration of the intersection between Business ethics and Beer production, underscoring the ethical considerations that have permeated the industry over the past century. Utilizing bibliometric techniques, we meticulously analyzed scholarly articles sourced from the Web of Science (WoS) Core Collection, spanning from 1900 to 2023. By harnessing the capabilities of the VOSviewer software, we mapped key term networks, shedding light on prominent trends, influential writings, and significant references. Our findings reveal an evolving emphasis on sustainable brewing practices, fair trade, corporate social responsibility, and the emerging ethical dimensions of the craft beer movement. However, the research acknowledges potential biases due to its reliance on a singular database and the dynamic nature of keyword labeling. While the insights offer valuable perspectives on the discourse surrounding Business ethics in beer production, they predominantly represent the viewpoints within the WoS Core Collection's scope. The study, therefore, serves as both a foundational reference and a springboard for further interdisciplinary investigations into this intriguing confluence.

Keywords: *Business Ethics, Beer Production, Sustainable Practices, Corporate Social Responsibility, Ethical Brewing.*

JEL Classification: *M14, L15, Q01*

1. Introduction

Beer, one of the world's oldest and most widely consumed beverages, has a rich history that dates back thousands of years. As a cultural and economic staple, its production and consumption patterns have evolved in tandem with societal norms and values. In recent decades, as global businesses have come under scrutiny for their ethical practices, the beer industry too finds itself at the crossroads of sustainability and responsibility. The fusion of business ethics and beer production is more than just a juxtaposition of two seemingly disparate areas. It represents a microcosm of the broader challenges and opportunities that global industries face in the 21st century. As consumers become increasingly conscious of

the ethical implications of their choices, industries, including beer production, must adapt to align with these shifting paradigms. In this literature review, we delve deep into the heart of this topic, drawing insights from a plethora of sources. We aim to shed light on the ethical dimensions that underpin the beer industry and elucidate the pathways through which responsible brewing can become the norm rather than the exception.

The interplay between Business ethics and Beer production may, at first glance, seem like an unconventional avenue of study. Yet, as industries evolve and consumers become more conscious of ethical considerations, understanding this relationship becomes paramount. This research delves into the myriad ways these two seemingly disparate domains intersect and influence one another, highlighting the importance of ethical practices within the beer production industry. By combing through a century's worth of academic literature, we seek to uncover trends, patterns, and insights that can guide current and future producers, consumers, and policymakers.

Business ethics, a multidisciplinary study that evaluates the moral dimensions of business decisions, has found its implications in various sectors, including the beverage industry (Jones, et al., 2013; Jones, 2018). Historically, the beer production industry has been marred by issues ranging from labor rights to environmental concerns (Olajire, 2020). As the global market for beer has grown, so has the scrutiny of its production processes (Esslinger, 2009). Early literature primarily focused on the economic and technical aspects of beer production (Garavaglia and Swinnen, 2018). However, as societal expectations shifted towards the latter half of the 20th century, a surge in studies examining the ethical considerations in beer production emerged (Ulver, et al., 2021). Several scholars have explored topics such as sustainable brewing practices, fair trade, and corporate social responsibility within this industry (Jones, 2018; Erhardt, et al., 2022). Moreover, with the rise of craft beer and microbreweries, new discussions around local sourcing, community engagement, and artisanal values have taken center stage (Foster, et al., 2017; Erhardt, et al., 2022). This literature review endeavors to synthesize these discussions, offering a comprehensive overview of the evolving landscape of business ethics within beer production.

2. Data and Methods

Purpose: Our investigation explores the nuanced connection between Business ethics and Beer production as evidenced in academic literature. The goal is to comprehensively chart the interconnectedness of essential terms linked to "ethics" and "beer" using bibliometric analysis.

Steps Undertaken: We conducted a bibliometric analysis on a selected set of academic papers sourced from the Web of Science (WoS) Core Collection database. This assessment covered publications from 1900 to 2023, incorporating even the latest contributions. Our search hinged on two primary terms: "Ethics" and "Beer", guaranteeing the extraction of relevant materials.

Tools Deployed: We utilized the VOSviewer software, renowned for its prowess in supporting co-occurrence evaluations. With its ability to depict keyword connections and clusters, VOSviewer provides insight into dominant patterns, seminal works, and significant references related to our subject matter.

Inherent Limitations: It's important to understand that while bibliometric analyses offer comprehensive insights, they come with inherent limitations. Our research predominantly relies on the WoS Core Collection for paper selection, which might overlook notable studies from other databases. Additionally, variations in keyword tagging and classification can lead to potential oversights of some relevant papers.

Scope of Findings: Our conclusions are predominantly derived from papers within the Web of Science Core Collection. Therefore, while they offer valuable insights, they may not

encapsulate the entire narrative on Business ethics and beer production. The relevance of our findings is mainly restricted to the range and timeframe of the papers reviewed.

Potential Biases: Bibliometric reviews are naturally prone to biases. These might arise from the selection of search keywords, the standards for paper inclusion, or the subjective judgments made during the identification of keyword clusters and author associations.

3. Results and Discussion

Study based on the complex description of cultural dimensions through three main characteristics: qualitative description of their key differences and characteristics (1), qualitative description through diverse values (2) and quantitative rating through the country index (3). These characteristics are mixed in the tables describing each of mentioned six dimensions.

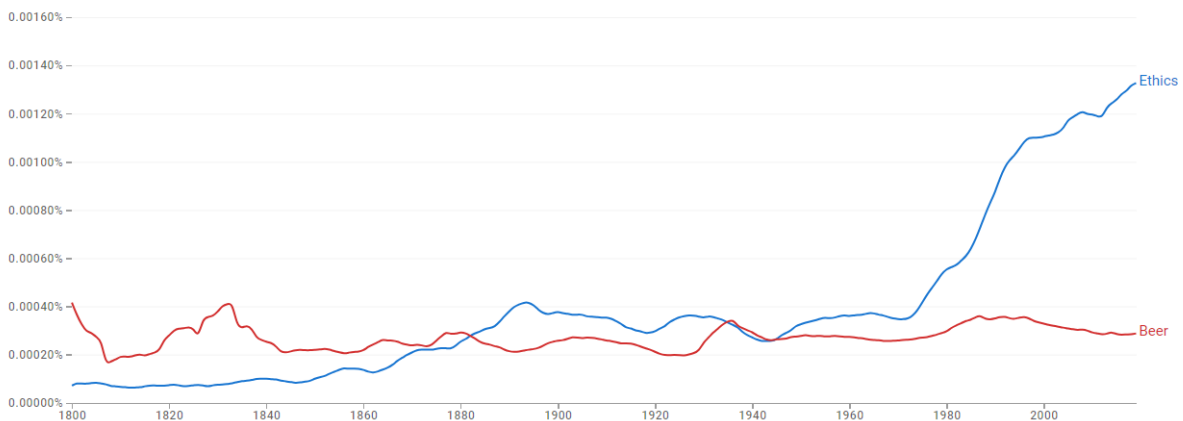


Figure 1 Temporal Trends in Literary Mentions: A Comparative Analysis of 'Ethics' and 'Beer' from 1800 to 2000

Source: own elaboration using Google N-Gram

The figure 1 showcases the frequency of the terms "Ethics" (represented by the blue line) and "Beer" (represented by the red line) in books written in English language from the years 1800 to just after 2000. The term "Ethics" starts with a relatively low frequency around 1800, with some minor fluctuations through the 19th century. Beginning in the early 20th century, particularly around the 1920s, there's a steady rise in its occurrence. This upward trend becomes especially pronounced from the 1960s onwards, peaking sharply by the early 2000s. The frequency of "Ethics" in printed material increases substantially over this period, indicating growing interest or emphasis on this topic. The term "Beer" demonstrates more variability compared to "Ethics". Starting from 1800, it exhibits some peaks and troughs until around the 1880s, after which there's a decline that lasts till the mid-20th century. Post the 1960s, the term "Beer" experiences a modest rise but remains considerably below its 19th-century peak. Overall, while "Beer" has had its moments of heightened interest, its frequency in printed books has remained relatively consistent from the mid-20th century to the early 2000s. While both terms have had their unique trajectories over the two centuries, "Ethics" has witnessed a substantial surge in its frequency, especially towards the latter half of the 20th century. In contrast, "Beer" has seen a more stable trend with a notable peak in the 19th century and a stabilization in the latter part of the graph.

For deeper analysis we used visualization of the research articles in monitored topics. For this, only articles from Web of Science database were used. The visualization (Figure 2) categorizes research articles into various academic disciplines based on the number of

records associated with each. Each rectangle's size corresponds to the number of records in respective discipline. The larger the rectangle, the more articles from that discipline. Each discipline is also color-coded for easy identification.



Figure 2 Interdisciplinary Insights: Distribution of 'Ethics' and 'Beer' Literature Across Academic Domains
Source: own elaboration using Web of Science analysis

The most substantial section, colored in deep purple, represents the "Medicine General Internal" discipline with 8 records. This suggests that the most considerable volume of articles relating to "Ethics" and "Beer" within the search results came from this category. The next most significant category is "Management," represented by a light green rectangle, with a total of 5 records. Next are Business and Economics. Both these fields, colored in different shades of green, have an equal number of records, each accounting for 4 articles. The category dedicated to "Ethics" has 3 records and is portrayed with a light purple color. This discipline was followed by Art, Computer Science Cybernetics, Cultural Studies, Medical Ethics, and Geography. These disciplines each have 2 records. They are represented in varying colors: bright green for "Art," dark blue for "Computer Science Cybernetics," pink for "Cultural Studies," orange for "Medical Ethics," and a light red for "Geography." Visualization provides a clear distribution of records across various disciplines for the search terms "Ethics" and "Beer." The most notable concentration appears in the field of "Medicine General Internal," suggesting an interesting intersection of these terms in medical literature.

Further, we dwelled deeper and analyzed the number of WoS publications on the topics of "Ethics" and "Beer". Figure 3 visualize outcomes where each horizontal bar represents a specific academic discipline, with the length of the bar indicating the number of WoS publications associated with that discipline for the given topics. Medicine General Internal is the discipline at the bottom with the longest bar, indicating the highest number of publications. The count approaches the value of 9 but doesn't reach it, suggesting that there are approximately 8 publications. The next bar above representing Business is significantly shorter than the first, indicates a lower number of publications than "Medicine General Internal." It's around half the length, indicating possibly 4 publications. Ethics has a length similar to "Business," which too represents 4 publications. Computer Science Cybernetics, Geography, Pharmacology Pharmacy, Business Finance, Geriatrics Gerontology, Integrative Complementary Medicine, Medicine Legal, Neurosciences, Political Science, and Public Administration are disciplines which have bars of comparable length, which is notably shorter than "Business" and "Ethics." Each bar suggests a count close to 1 publication for

the topics of interest. In summary, figure provides a clear depiction of the distribution of WoS publications on "Ethics" and "Beer" across various academic fields. The "Medicine General Internal" discipline stands out with the highest number of publications, followed by "Business" and "Ethics." All other disciplines listed have roughly similar, lesser counts.

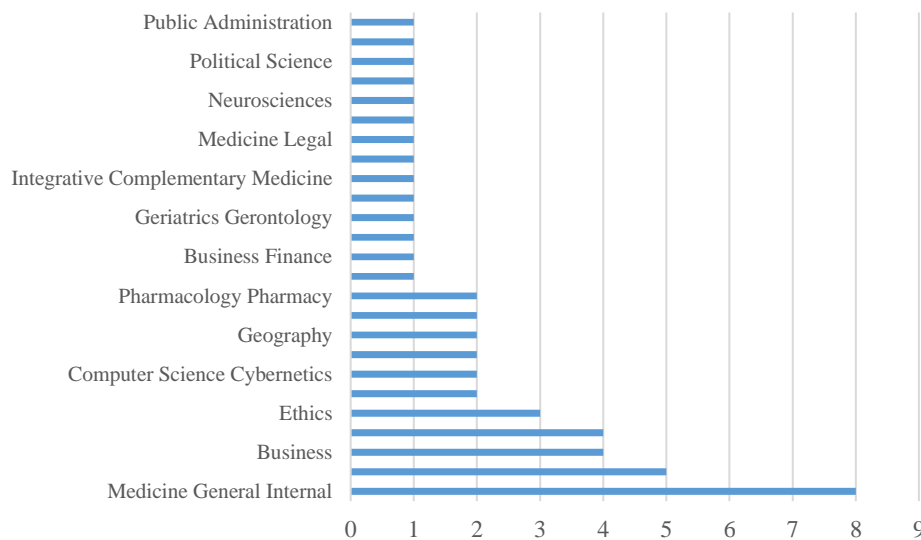


Figure 3 Number of WoS publications on the topics of "Ethics" and " Beer" (Retrieved November, 2023)
Source: authors' processing using WoS data

Research articles on the topics of "ethics" and "beer" from the Web of Science have been published across multiple countries. Here is a breakdown of the countries and the number of respective publications:

- USA stands out with the highest number of publications, accounting for 9 articles.
- Both Canada and England have contributed equally with 4 publications each.
- Australia and France have 3 articles each.
- A group of countries, including Denmark, Germany, India, Iran, Ireland, Malaysia, Norway, and Sweden, have contributed 2 articles each.
- Meanwhile, Croatia, Finland, Italy, Lithuania, Mauritius, Netherlands, People's Republic of China, Scotland, Singapore, Spain, and the United Arab Emirates have each published 1 article on the subjects of "ethics" and "beer."

This distribution indicates a diverse range of interest in these topics across different regions, with a notable concentration in the USA.

Utilizing a co-occurrence analysis approach, we assessed the interrelations of keywords within a specific dataset. The method employed the "all keywords" unit and used the "full counting" counting method. From the pool of 256 keywords, we set a threshold, selecting only those keywords with a minimum of 2 occurrences, narrowing it down to 33 significant keywords for visual representation. The presented network visualization can be interpreted in several clusters. Red Cluster (Medical and Geriatric Focus): Central to this cluster is the topic of 'people', especially 'older-people' and 'hospitalized-patients'. Keywords like 'readmissions', 'medication use events', and 'beers criteria' suggest a strong focus on the medication practices and challenges in geriatric populations. 'Polypharmacy' and 'inappropriate medication use' indicate concerns around multi-drug administration and potential issues arising from it. Purple Cluster (Ethical and Management Aspect of Alcohol): This cluster centralizes on 'ethics', linking directly to 'alcohol' and its various sub-themes such as 'drinking', 'consumption', and specific types like 'beer' and 'wine'. The presence of

'marketing' implies a possible exploration of the promotion strategies and ethical considerations in advertising alcoholic beverages. Green Cluster (General Health and Alcohol): Interlinking with both the red and purple clusters, this sector touches on 'adult health men' and 'beer disease', suggesting a study into the specific health implications of alcohol consumption, especially in adult male populations. The visualization (Figure 4) illuminates the multifaceted discussions surrounding alcohol - from its consumption and associated health impacts to the ethical considerations in its promotion and management. These interconnections underscore the complexity of the subject and the myriad areas of interest within academic and research circles.

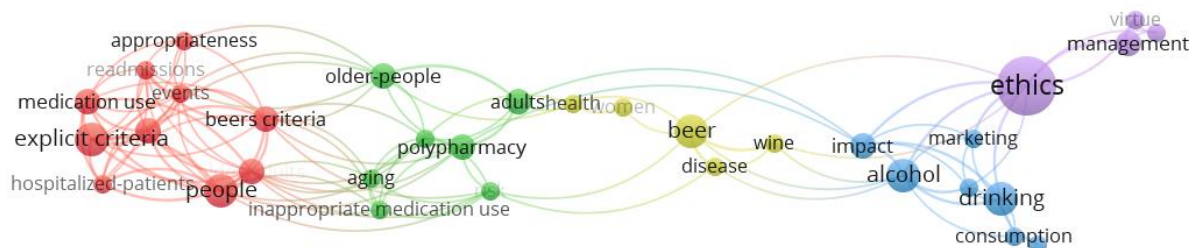


Figure 4 Co-occurrence Network Visualization of Keywords Ethics and Beer in WoS literature
Source: authors' processing using the VOSviewer software and data from the Web of Science database

The overlay network visualization employs a color gradient to illustrate the temporal progression and prominence of keyword themes over a span of years, from 2012 to 2018 (Figure 5 clearly indicates two main clusters of outcomes. Blue Cluster (Earlier Focus - Ethics and Management of Alcohol): The initial years, depicted in darker shades of blue, primarily revolve around the ethical implications and the management side of alcohol. Keywords such as 'ethics', 'management', 'marketing', and 'impact' all suggest a focus on the ethical considerations and promotional strategies surrounding alcohol consumption.

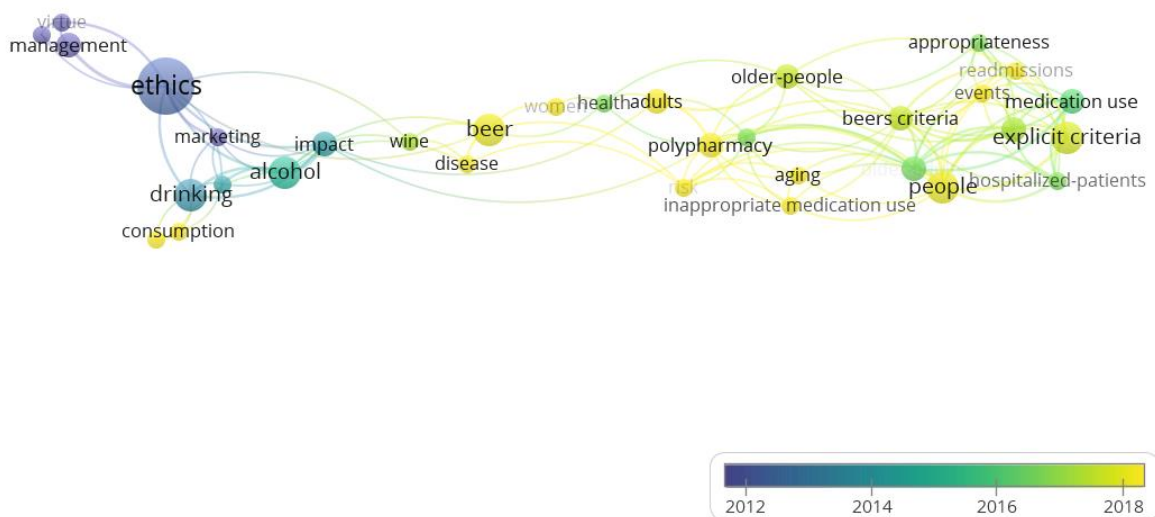


Figure 5 Overlay Network Visualization of Keywords Ethics and Beer in WoS literature
Source: authors' processing using the VOSviewer software and data from the Web of Science database

Yellow-Green Cluster (Later Focus - Medical Implications and Geriatric Care): As we transition towards the later years, represented by lighter shades and culminating in the yellow-green hues of 2018, the research focus shifts towards medical implications, particularly in the elderly. Central to this cluster are keywords like 'older-people',

'hospitalized-patients', and 'aging'. The concerns of 'polypharmacy', 'beers criteria', 'inappropriate medication use', and 'readmissions' reflect the complexities of medication management in older populations. The bridging topics such as 'beer disease' and 'adult health' emphasize the crossover of themes, showing the interrelatedness of alcohol consumption's societal impact and its medical implications. The transition from darker to lighter colors depicts a chronological shift in research interests, suggesting that while earlier years were dominated by ethical discussions surrounding alcohol, recent years have seen a surge in topics associated with its medical ramifications, especially in geriatric care.

The density visualization offers a heatmap-like representation, illustrating areas of high keyword co-occurrence, and thereby shedding light on the most dominant research themes. Leftmost Dense Region (Medical and Geriatric Concerns): This concentrated red-orange region encompasses terms like 'hospitalized-patients', 'medication use', 'explicit criteria', 'readmissions', and 'beers criteria'. It signifies a strong research focus on the medical aspects, particularly concerning elderly patients. Keywords such as 'inappropriate medication use', 'aging', 'older-adults', and 'polypharmacy' further underscore the intricate dynamics of medication and health management in the elderly population.



Figure 6 Density Visualization of Keywords Ethics and Beer in WoS literature

Source: authors' processing using the VOSviewer software and data from the Web of Science database

Central Region (Interlinking Themes): Merging the medical with behavioral aspects, this region captures terms like 'risk', 'disease', 'beer', and 'wine'. It portrays an intersection, signifying the association between certain diseases or risks and specific alcoholic beverages. Rightmost Dense Region (Ethical and Consumption Patterns): Dominated by intense shades, this region revolves around 'ethics', 'management', 'consumption', 'drinking', and 'alcohol'. It emphasizes the ethical considerations, promotional strategies, and the overall societal impact of alcohol consumption. Terms like 'impact' and 'marketing' also hint at the broader implications of alcohol promotion and its effects on consumption patterns. In summary, the visualization distinctly demarcates the progression from medical implications, especially concerning the elderly, to the societal impact and ethical considerations surrounding alcohol. With a total of 5 clusters, 121 links, and a cumulative link strength of 163, the density map is rich with insights, detailing the intertwined nature of these research areas.

4. Conclusion

This comprehensive study provides valuable insights into the intersection and evolution of the topic's "ethics" and "beer" across time and academic disciplines. The findings indicate an upward trend in the literary mentions of "ethics" over the years, particularly from the 1960s onwards, suggesting a growing interest or emphasis on ethical considerations in

printed material. While the term "beer" had its peak mentions in the 19th century, its frequency in printed materials stabilized from the mid-20th century to the early 2000s. A notable concentration of research articles on "ethics" and "beer" lies in the "Medicine General Internal" discipline, indicating a fascinating intersection of these topics in the medical domain. The USA stands out with the highest number of publications on these topics, showcasing the country's keen interest in these areas of study. Co-occurrence analysis reveals interconnected discussions surrounding alcohol, ranging from consumption and health impacts to ethical considerations in promotion and management. The research prominently emphasizes the medical practices and challenges in geriatric populations, including medication practices and potential issues related to multi-drug administration. A chronological shift in research interests is evident from the overlay network visualization. While earlier years focused on the ethical discussions surrounding alcohol, recent years leaned towards its medical implications, particularly concerning geriatric care. The density visualization highlights dominant research themes, distinctly marking the progression from medical implications, especially concerning the elderly, to societal impact and ethical considerations surrounding alcohol. The research is instrumental in understanding the multifaceted discussions around "ethics" and "beer", offering a holistic view of their significance and interconnectedness in the academic realm.

Acknowledgment

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Author Declaration: I author of the above-titled paper hereby declare that the work included is original and is an outcome of the research carried out by the authors indicated in it. Further, I author declare that the work submitted has not been published already or under consideration for publication in any Journals/Conferences/Symposia/Seminars. I also declare that the work does not infringe on any copyrights, property rights of others including licenses and it is free from plagiarism.

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Economic Determinants of Beer Consumption as Support for Managerial Planning

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Abstract

Beer is the most popular Czech drink and is a very important sales item for the hospitality industry. Knowledge of the effect of economic determinants is necessary for a deeper analysis of demand. It is the knowledge of demand that is important in the implementation of the management planning process. This paper deals with the influence of selected economic determinants on beer consumption per person in the Czech Republic. The monitored determinants are the development of GDP per capita, population growth and price development. Overall, using the ARDL model, a statistically significant connection between macroeconomic conditions and beer consumption was found. Specifically, the results show a procyclical pattern of beer drinking.

Keywords: Beer consumption, Macroeconomic condition, ARDL model, Of-trade, On-trade

JEL Classification: N30, D12, Q11

1. Introduction

The long-standing tradition of brewing beer, its quality, drinkability and taste rank Czech producers among the world-renowned beer producers. In the world you can meet different types of beers that are brewed in the style of Czech Pilsner and Budejovice light lagers, see Kozák and Lapčíková (2021). The Czech Republic has long been among the countries with the highest average consumption of beer per person (in litres). Brewing thus belongs to the traditional branches of the Czech economy. It is an important customer of the production of Czech farmers. It also significantly affects hospitality and restaurant operators. Knowledge of the determinants influencing beer consumption is very important for strategic decision-making by both breweries and business operators.

People have been drinking beer for thousands of years, and it is definitely one of the most popular beverages around the world. Beer consumption in the world in 2021 increased by four percent to 1.856 billion hectoliters. It thus recorded the first growth in two years, as restaurant sales revived after the COVID-19 pandemic. In the Czech Republic, similarly to Germany, Slovakia and other countries, beer is one of the most popular alcoholic beverages. Why is that so? There will probably be many reasons, in any case, climatic conditions will probably be one of them. For example, the production of grapes for wine, as for another popular drink, requires certain conditions that are usually found in warmer climate zones. In contrast, barley, as the basic raw material for beer production, can be grown in colder regions.

Alcohol consumption is related to changes in the economy and at the same time is known to have a major impact on human health. As stated for example by Im et al. (2023), excessive

alcohol consumption is associated with 61 diseases. However, alcohol is also associated with intentional and unintentional criminal acts, such as violence, traffic accidents, etc., see for example Rehm et al. (2003). In addition to economic influences, alcohol consumption is also influenced by the fact that it is a potentially addictive commodity. For this type of commodity, higher past consumption may cause higher current and expected future consumption, see Koksal and Wohlgenant (2011).

Several studies have dealt with the evaluation of the influence of economic determinants on the consumption of alcoholic beverages. Fogarty (2010) investigated the price and income elasticity of demand for beer, wine and other alcoholic beverages for selected countries and concluded that, although the analysed demand is price inelastic, it has become less and less inelastic since the 1950s. Similarly, he finds the average income elasticity of demand to be positive in the interval from 0 to 1, i.e. inelastic. Specifically, for beer, values range from 0.4 to 0.9 in most countries. Therefore, according to economic theory, beer can be considered a normal product, i.e. a product of normal daily consumption. Ogwang and Cho (2009) examined the economic determinants of demand for three alcoholic beverages for ten Canadian provinces. These determinants were price, income and unemployment. The authors demonstrated that income is an important determinant of wine and spirits consumption, but not beer. While unemployment appears to be an important determinant of beer consumption, but not wine or spirits. Colen and Swinnen (2015) analysed the development of beer consumption in relation to economic growth and globalization. The authors found that beer consumption initially increases with increasing income; but at higher income levels, beer consumption declines. Furthermore, increasing globalization has contributed to the convergence of alcohol consumption patterns across countries.

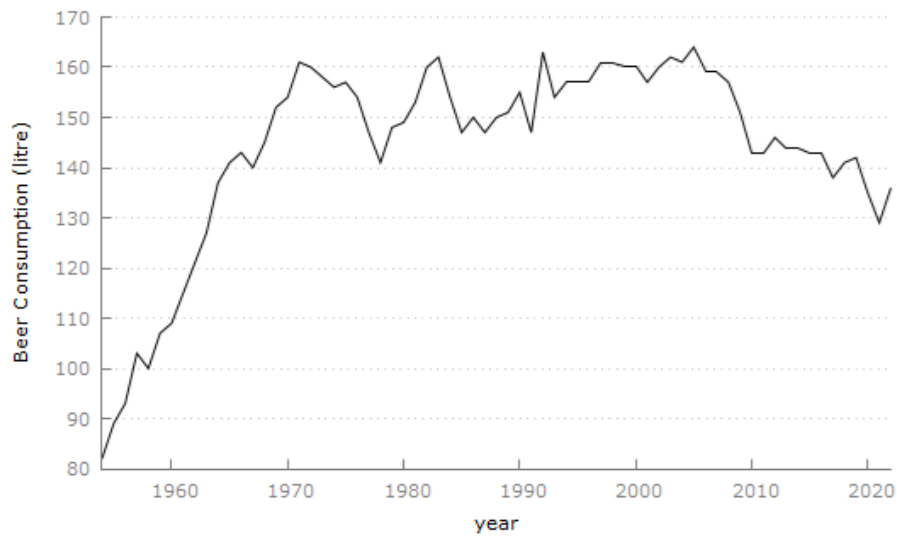
This paper deals with the influence of selected economic determinants on beer consumption per person in the Czech Republic. The monitored determinants are the development of GDP per capita, population growth and price development. We therefore address the research question of whether macroeconomic conditions influence beer consumption per person in the Czech Republic. The obtained results can then serve as support in the strategic decision-making of brewery management.

2. Data and Methods

The average consumption of beer per person gradually developed, for example in 1948 the average Czech drank 76 Liters of beer, in 2022 it was 136 Liters of beer. So, the consumption of beer almost doubled. For the sake of interest, let us add that as regards the total consumption of alcohol, it has more than quadrupled between the mentioned years. In 1948, the average consumption of pure alcohol was 2.4 Liters per person, and in 2022 it was 10 Liters of pure alcohol per person.

The following graph represents the annual development of beer consumption per capita between the years 1954 and 2022. The graph shows that beer consumption grew intensively until the 1970s with a peak in 1971, which was not surpassed until 1983. In that year, the average annual consumption was 162 Liters of beer, which is the most in the entire pre-November era. The record in beer drinking was achieved in 2005, when the average inhabitant of our country was 164 l. After this year, beer consumption in the Czech Republic began to decline slightly.

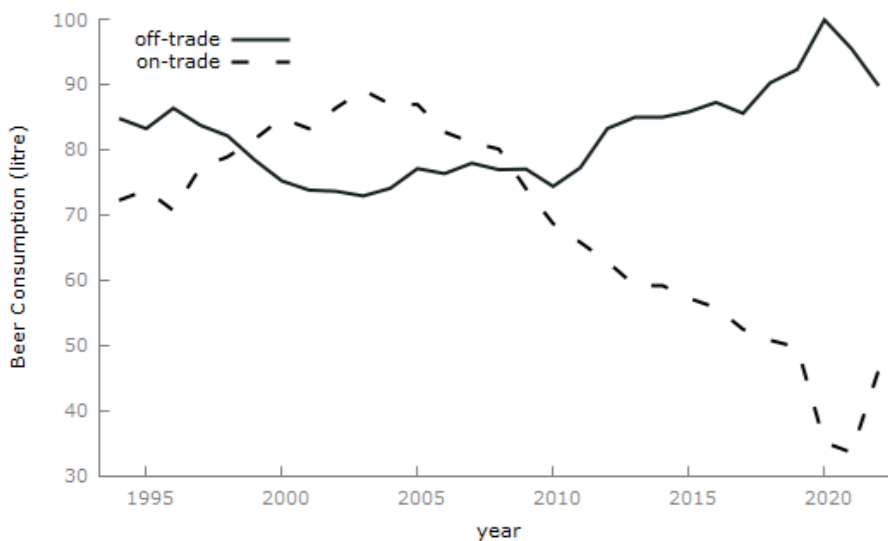
Figure 1: Beer consumption per person in the Czech Republic (litres)



Source: Czech Association of Breweries and Malthouses

Beer consumption can also be examined according to the place of consumption. From this point of view, we distinguish between on-trade and off-trade segments. Off-trade includes sales of beer in retail stores, and on-trade consumption occurs in gastronomic establishments, see (Kozák, 2013). This is related to the distribution of consumption according to the type of packaging, where in the on-trade beer is sold mainly in kegs or tanks, and the rest of the packaging is sold in the off-trade. Figure 2 presents the development of beer consumption per person divided into on-trade and off-trade. The monitored period is the years 1994 to 2022. It can be seen from the figure that the decline in beer consumption after 2005 is mainly due to the decline in consumption in the on-trade segment. Since 2010, there has been a significant shift of customers from on-trade to off-trade. This was most evident during the COVID-19 pandemic. Even in 2019, the ratio between beer exhibition in the on-trade and off-trade segment reached 35% to 65%, i.e. 92.3 l to 49.7 l. Pandemic safety measures, restrictions on restaurant operations in 2003 significantly limited the consumption of beer in bars and restaurants where the share of total consumption fell from 35% to 26%, i.e. from 49.7 l per person to 35.1 l per person.

Figure 2: On-trade and Off-trade beer consumption per person (litres)



Source: Czech Statistical Office

The aim of our research is to investigate the effects of selected economic variables on beer consumption. Due to the limited availability of economic data for certain periods, we choose the period from 1990 to 2022.

We therefore consider the real gross domestic product per capita (GDPpc) as an explanatory variable, which is an important quantity measuring macroeconomic conditions. Furthermore, the consumer price index (CPI), which represents the price level as the average price level of the consumer basket for the average household. Its increase expresses the rate of inflation in the economy. As the last variable we consider population growth, they provide some indication of the relative size of the population (POP) that potentially consumes alcohol. The data was obtained from the Czech Statistical Office and Federal Reserve Bank of St. Louis.

So, we construct the following model

$$Beer = f(GDPpc, CPI, POP) \quad (1)$$

We apply log transformation to eliminate potential heteroscedasticity issue and it can be rewritten as follows:

$$\ln Beer_t = \alpha_0 + \alpha_1 \ln GDPpc_t + \alpha_2 \ln CPI_t + \alpha_3 \ln POP_t + \varepsilon_t \quad (2)$$

where $Beer_t$ measures the beer consumption in year t , $GDPpc_t$ is the GDP per capita in year t , POP_t is population growth in year t , ε_t is the disturbance term, α_0 is the intercept (constant), $\alpha_1, \alpha_2, \alpha_3$ are coefficients. We include a dummy variable (D_t , i.e., D_{2020} and D_{2021}) in our model to take COVID-19 effects into account. The Eviews statistical package was used for data analysis.

The unit root test suggested by Dickey and Fuller (1979) has been used to test the stationarity of the variables. We employ the autoregressive distributed lag (ARDL) approach to explore the cointegration for long-run association between used variables, see Pesaran (2001). After finding a long-run relationship in the first step, the second step of the analysis is processed forward, which is to estimate the coefficients of the long-run relationship and determine their values, followed by the estimation of the short-run elasticity of the variables with the error correction representation of the ARDL model, see Pokhrel and Khadka (2019), Tzougas (2013).

Table 1 presents the descriptive statistics of the variables used, including result of the Jarque-Bera normality test. Table shows that all the variables have normal distribution.

Table 1: Descriptive statistics

	l_Beer	l_GDPpc	l_POP	l_CPI
Mean	5.016	9.592	16.155	4.336
Median	5.043	9.677	16.151	4.418
Min	4.859	9.233	16.141	3.401
Max	5.099	9.931	16.17	4.894
St. Dev.	0.065	0.228	0.011	0.373
Skewness	-0.561	-0.148	0.196	-1.038
Kurtosis	-0.822	-1.364	-1.675	0.312
Missing Obs.	0	0	0	0
Jarque-Berra	2.671	2.687	4.073	4.222

Source: authors

3. Results and Discussion

It is clear from Table 1 that the null hypothesis of unit root for all the time series are rejected at their first differences since. Therefore, we applied the ARDL bounds tests to investigate the long-run relationship.

Table 2: Unit Root Test

Series	ADF test level		ADF test first difference	
	Intercept	Intercept and Trend	Intercept	Intercept and Trend
l_Beer	-1.001	-2,621	-5.226***	-5.301***
l_GDPpc	0,168	-2.712	-5.987***	-5.755***
l_POP	-1,971	-2,952	-3.561**	-3,458**
l_CPI	-1.626	-0.239	-3.489**	-3.852**

Source: Authors (* significant at 10%; ** significant at 5%; *** significant at 1%)

To examine the long and short run relationship among variables, the co-integration relationships between variables are tested using ARDL model. The Johansen cointegration test has been applied to explain the existence of the cointegration relationship. The optimal lag order is set to 2 which is based on the Akaike information criterion.

Table 3: Johansen cointegration test of the related variables

No. Of CVs	Trace Test Statistics	Max. Eigenvalue Test Statistic
None	82.569***	44.784***
At most 1	37.785***	25.954***
At most 2	11.830	11.576
At most 3	0.254	0.255

Source: Authors (* significant at 10%; ** significant at 5%; *** significant at 1%)

So, we reject the hypothesis of no long-run relationship, and accepts the alternative hypothesis that there is a long-run cointegration relationship.

Table 4: Long-run and short-run analysis

Long-run analysis	
Constant	2.309***
$\ln GDPpc_t$	0.252***
$\ln POP_t$	-0.051
$\ln CPI_t$	-0.631**
Short-run analysis	
$\Delta \ln Beer_t$	-0.005
$\Delta \ln GDPpc_t$	0.481***
$\Delta \ln POP_t$	0.891
$\Delta \ln CPI_t$	-0.145**
D_{2020}	-0.044***
D_{2021}	-0.009
ECM_{t-1}	-0.453***

Source: Authors (* significant at 10%; ** significant at 5%; *** significant at 1%)

In order to verify the validity of the ARDL model the following tests were carried out: regression specification error test, serial correlation test, heteroscedasticity test, normality test and stability test. The mentioned tests confirmed the reliability of the estimated ARDL model.

The results from Table 4 show that, in the long run, a 1% increase in real GDPpc increases beer consumption by 0.25%. Furthermore, an increase in the price level by 1% causes a decrease in beer consumption by 0.63%. Thus, beer consumption per person is price inelastic in the long run.

The short-term dynamics results indicate that 1% of GDPpc is associated with a 0.48% increase in beer consumption per capita. The price inelasticity of beer consumption is also evident, with the short-term inelasticity being significantly smaller than the long-term inelasticity. Specifically, a 1% increase in prices will reduce per capita beer consumption by 0.15%. Furthermore, the dummy variable for 2020 is statistically significant and negative, indicating that beer consumption per person decreased by 4.4% in 2020. The ECM value indicates the existence of a long-term relationship between the variables.

Overall, using the ARDL model, a statistically significant connection between macroeconomic conditions and beer consumption was found. Specifically, the results show a procyclical pattern of beer drinking, which is consistent with Helble and Sato (2011), for example.

4. Conclusion

We looked at the influence of selected economic determinants on beer consumption in the Czech Republic. The monitored determinants were the development of GDP per capita, population growth and price development. We addressed the research question of whether macroeconomic conditions influence beer consumption in the Czech Republic. The results show a statistically significant long-term and short-term relationship between beer consumption per capita and macroeconomic conditions.

Beer consumption has been declining in recent years, and this is most noticeable in the trade-on segment. The shift of consumption from the on-trade to the off-trade segment, and therefore the decreasing volume of beer sold in restaurants and pubs, reduces the ability of the hospitality sector to generate jobs based on beer sales.

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Craft Brewing in Slovakia: Basic Facts about This Trend

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Abstract

The aim of the contribution is to point out the situation in the brewing sector, which led to the boom of craft breweries in Slovakia. Within the contribution, attention is mainly focused on the evaluation of the development of consumption, production, trade balance and on trade vs. off trade of beer consumption. From the results, the trend of decreasing consumption in the last 20 years can be seen, and it can be assumed that the consumption will be at the level of 62-69 liters per capita in the following years. Beer production is on average above the level of 3 mil. hl per year. This trend can be assumed in the following years and will reach the level of 2.9 to 3.4 million. hl per year. The trade balance showed a negative balance and it will be the same in the next period as well. The homogenization of beer as a product led to the creation of small breweries, of which there are currently 96. Our analysis shows that there is still place for more breweries, even if their number will probably grow at a slower pace than before. We assume that an average of 5-8 breweries per year will be established in the next period.

Keywords: craft beer, consumption, production, number of breweries

JEL Classification: C87, L66, R1

1. Introduction

The brewing industry, not only in Slovakia, has undergone many changes in recent years. The expansion of large multinational companies has mainly occurred through various mergers and acquisitions (Colen and Swinnen, 2011). After the opening of the Slovak economy, there was intense pressure from multinational corporations, which showed an increasing interest in buying Slovak breweries. This effort resulted in the purchase of the Slovak breweries Zlatý bažant in Hurbanov, Corgoň in Nitra, Martiner in Martin and Gemer in Rimavská Sobota by the multinational company Heineken from the Netherlands. Similarly, the company SAB Miller also came to Slovakia, which first bought the Šariš brewery in Veľký Šariš and later the Topvar brewery in Topoľčany. These globalization tendencies, on the one hand, contributed to the efficiency of the production and sale of beer to customers through the modernization of technology and the introduction of innovative elements in the management of companies, but on the other hand, they led to the closure of established breweries that had existed in the respective regions for decades (Morgan et al., 2020). Due to the homogenization of production, the differences of individual regional brands disappeared and products were unified, which led to higher efficiency and better economic results for companies, but also to a loss of diversity and a wider offer on the beer market. The concentration of the market in Slovakia was so enormous that the mentioned 2 entities managed almost the entire market, since there were only a few breweries left operating in Slovakia, which were only able to compete with the multinational giants with difficulty. However, a similar concentration can also be seen on a global scale, as the 3 largest brewing companies (AB InBev, Heineken and Carlsberg) provide half of the global beer production (Pokrivčák et al., 2019).

Globalization has led to the homogenization of the product (Clemonts et al., 2006) and consequently to the reduction of the offer of beer types. The product produced by multinational breweries (also called *Europivo*) led to reduced consumption and thus opened the door to new smaller breweries that gradually began to emerge. In Western Europe, the share of craft beer is roughly 3-5%, the same is true in the USA. In Eastern Europe, it is roughly at the level of 1% (Swinnen, 2011). Currently, their number has increased to 96 breweries in Slovakia. However, it is not only a trend in Slovakia. It is the same in the world. For example, there are already more than 600 breweries in the Czech Republic, more than 400 in Poland. These small breweries are characterized as independent breweries offering beer in smaller quantities, but in several variations (Tremblay and Tremblay, 2011). They offer different types of beers, from classic lagers to IPA, APA, Stout, Porter, less well-known in Slovakia. Craft breweries usually offer their products in limited quantities within a certain region and therefore do not compete with each other. Many of them are associated with the Association of Small Independent Breweries, which carries out educational, advisory and cooperation activities. This initiative is open to all craft breweries, it tries to protect the production of beer so that it is made in a traditional way from the best natural ingredients. The main goal is the effort to achieve fair conditions for tax differentiation for small independent breweries and thus protects these breweries so that they remain independent and thus preserve their own identity based on Slovak values. A more diversified offer has also changed market behavior. Slovakia, a country where exclusively lager-type beers were preferred, was able to adopt this trend and many customers adjusted their customer preferences.

2. Data and Methods

The contribution is aimed at evaluating the development of the brewing industry in Slovakia. The analyzed period is the span of 2010 – 2021. Its aim is to point out the situation in the brewing sector, which led to the boom of craft breweries in Slovakia. Within the contribution, attention is mainly focused on:

- development of beer consumption (in absolute terms, as well as per capita) in Slovakia,
- development of beer production in Slovakia (in million hl),
- development of the trade balance with beer (in thousand hl),
- development of on trade / off trade balance (in %),

Data from the Brewers of Europe database, which brings together national associations of beer and malt producers, is used for data analysis. As part of the research, comparative analysis is used when comparing indicators in several countries and several years and time series analysis, where we focus on evaluating the development trends of individual indicators through a trend equation.

3. Results

Beer consumption is an important performance indicator of the brewing industry. In the last two decades, there has been a significant decrease in beer consumption not only in Slovakia, but also worldwide. If we look at global data, in 2005 the average beer consumption per capita was 19 l, but currently (year 2022) it is only at 15 l, which represents a decrease of almost 18%. It is therefore possible to talk about copying this trend in Slovakia as well.

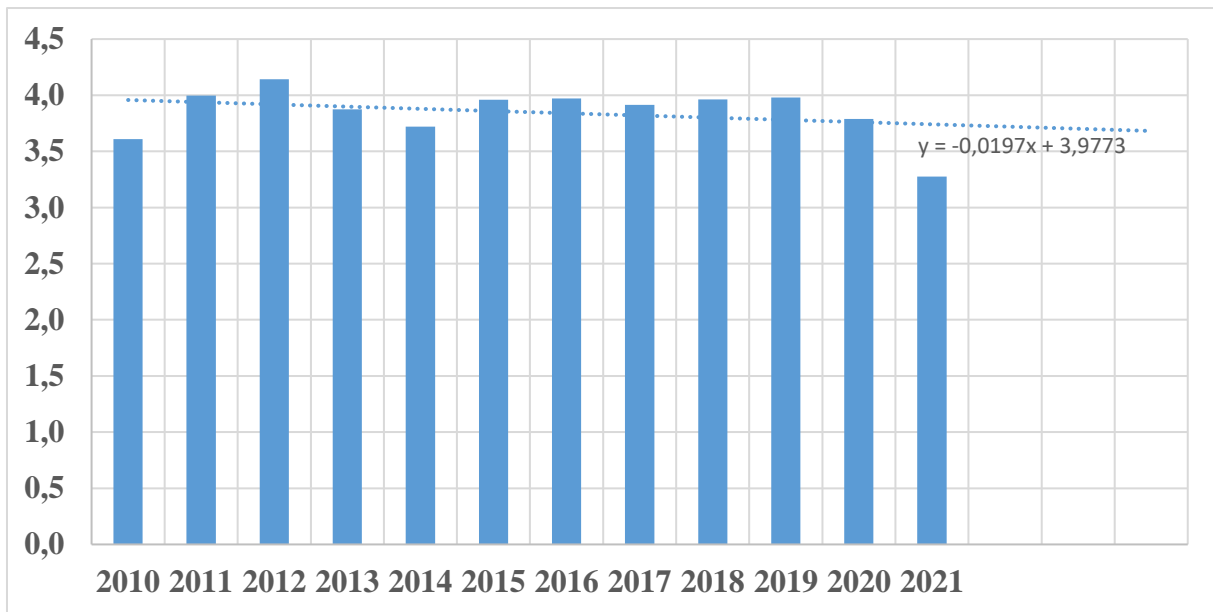


Figure 1: Total consumption of beer in Slovakia (in mil. hl)
Source: Brewers of Europe (2022), own processing

Looking at Figure 1, we see stagnation or a slight decrease in total beer consumption in Slovakia. This trend is characterized by the linear equation $y = -0.0197x + 3.9773$. In the examined period between 2010 and 2021, a decrease in beer consumption by 10% can be seen, mainly due to extremely low consumption in 2021. The average consumption was at the level of 3.8 million hectoliters. It is possible to assume that the consumption of beer in the following years will also range from 3.3 million hectoliters to 3.7 million hectoliters hl.

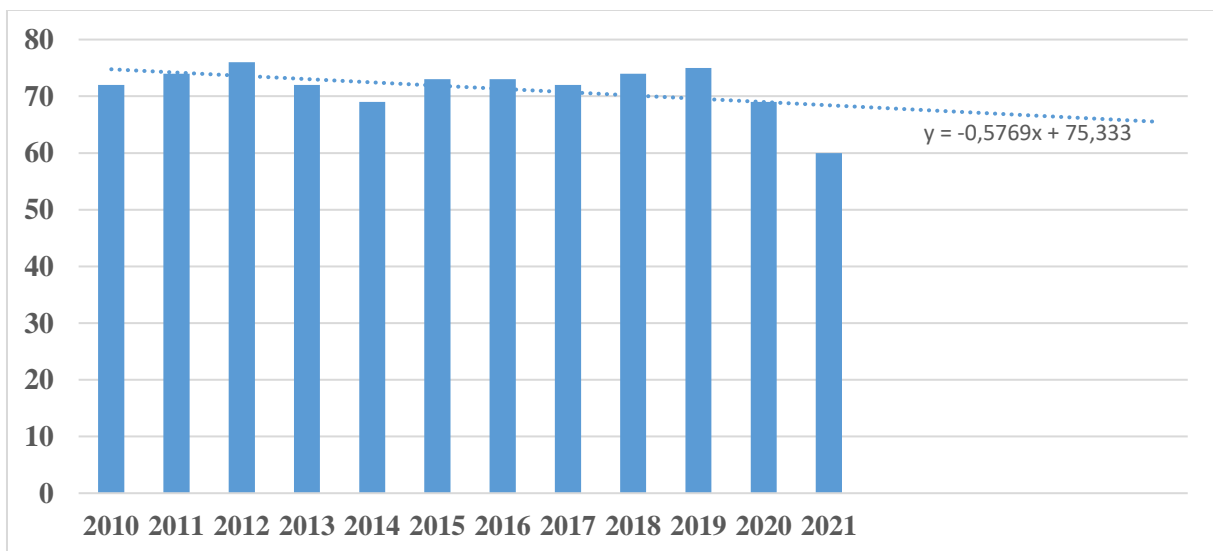


Figure 2: Beer consumption per capita (in l) in Slovakia
Source: Brewers of Europe (2022), own processing

An even better indicator for comparison between countries is consumption per capita. At the beginning of the 21st century, Slovakia was among the top 10 countries with the largest beer consumption. In 2002, beer consumption per capita in Slovakia was 95 l. When we look at the present, we see that the average value in the examined period of 2010-2021 was lower

by up to 24% compared to the mentioned year. Even in this case, stagnation or a slight decline can be seen in the monitored period. This trend is characterized by the equation $y = -0.5769x + 75.333$. We assume that even in the next five years, the consumption of beer calculated per inhabitant will be in the range of 62 l to 69 l.

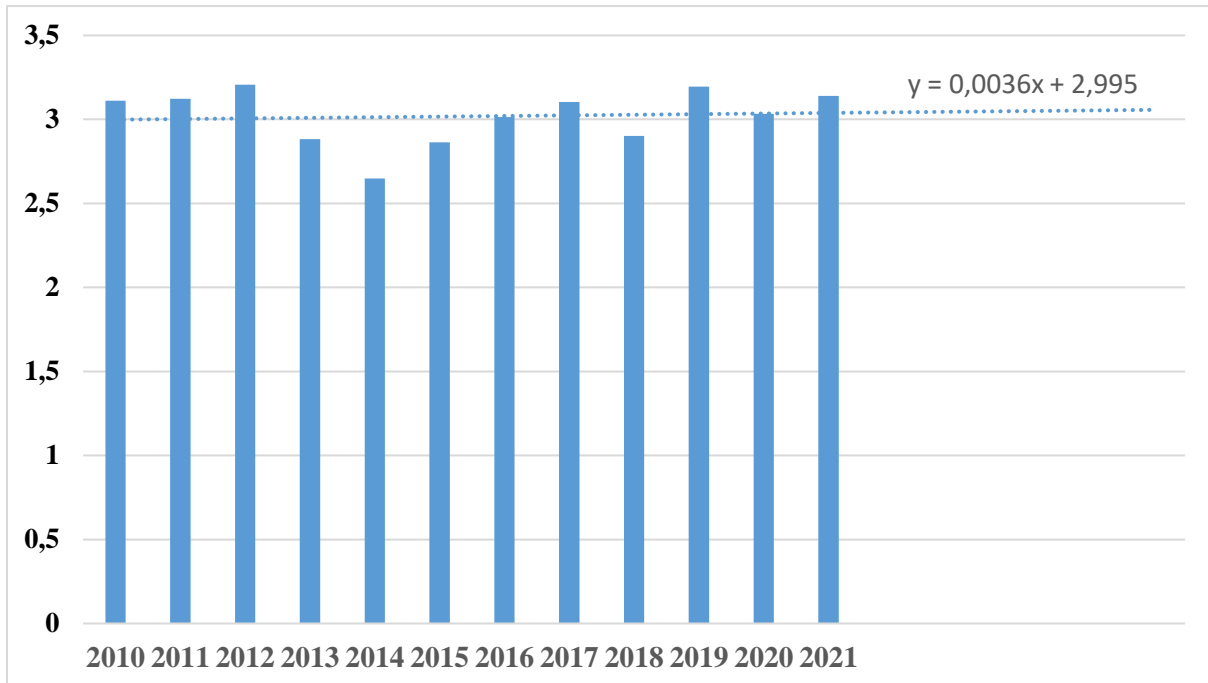


Figure 3: Beer production (in mil. hl) in Slovakia
Source: Brewers of Europe (2022), own processing

Beer production depends on consumption. In the examined period, this production had a balanced trend and its development is characterized by the linear equation $y = 0.0036x + 2.995$. However, the average value in the given period is more than 20% lower than at the beginning of the 21st century, when it exceeded 4 million. hl of produced beer per year. In the next period, we anticipate production of beer in Slovakia in the range of 2.9 mil. hl up to 3.4 mil. hl. Due to the fact that Slovakia is an open economy, demand from abroad also affects production.

		Inport	Export	Difference
2011	INTRA-EU	1 025	129	-896
	EXTRA-EU	1	6	5
2012	INTRA-EU	1 101	164	-937
	EXTRA-EU	6	7	1
2013	INTRA-EU	1 157	290	-867
	EXTRA-EU			
2014	INTRA-EU	1 272	200	-1 072
	EXTRA-EU			
2015	INTRA-EU	1 626	92	-1 534
	EXTRA-EU			
2016	INTRA-EU	1 509	127	-1 382
	EXTRA-EU			
2017	INTRA-EU	619	116	-503

	EXTRA-EU			
2018	INTRA-EU	612	79	-533
	EXTRA-EU	5	11	6
2019	INTRA-EU	1 717	55	-1 662
	EXTRA-EU	6	32	26
2020	INTRA-EU	1 708	288	-1 420
	EXTRA-EU	3	64	61
2021	INTRA-EU	1 551	193	-1 358
	EXTRA-EU	4	110	106

Figure 4: Trade balance (in tis. hl)
Source: Brewers of Europe (2022), own processing

The trade balance clearly shows that Slovakia imports more beer than it exports. By default, more than one million hectoliters of beer comes to Slovakia. It is mostly beer from the Czech Republic, Germany, Belgium, the Netherlands and Great Britain. In a similar way, beer exports from Slovakia go primarily to EU countries.

2012	ON	40	2017	ON	29
	OFF	60		OFF	71
2013	ON	40	2018	ON	29
	OFF	60		OFF	71
2014	ON	34	2019	ON	29
	OFF	66		OFF	71
2015	ON	37	2020	ON	20
	OFF	63		OFF	80
2016	ON	37	2021	ON	20
	OFF	63		OFF	80

Figure 5: On trade/ Off trade balance (in %)
Source: Brewers of Europe (2022), own processing

An interesting indicator of customer preferences is the ratio of beer consumption at home on the one hand (off trade) vs. in restaurants, pubs, hospitality establishments on the other side (on trade). This ratio has changed significantly in recent years. In the past, this ratio was balanced (50:50), but gradually the ratio towards domestic consumption of beer grew up to the current 80% vs. 20%. The main reason is the lower price of beer in supermarkets, hypermarkets, or other stores. Compared to prices in restaurants, this price is 4-5 times lower.

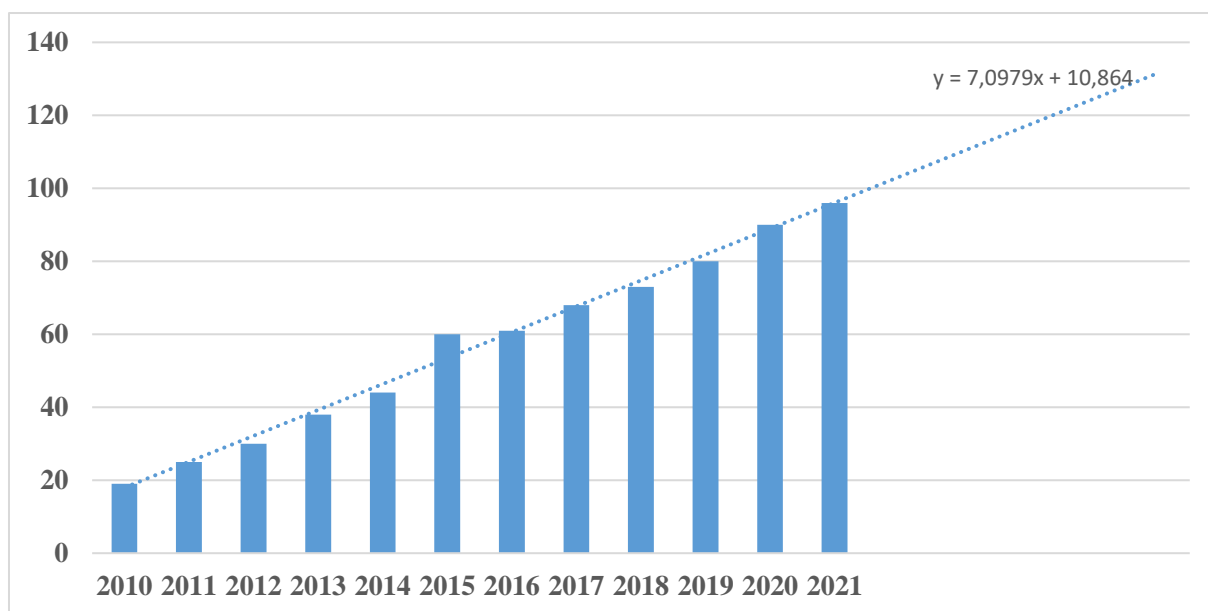


Figure 6: Number of breweries in Slovakia
Source: Brewers of Europe (2022), own processing

All these assumptions caused the growth of the number of breweries. In 2010, there were only 18 of them, and we can already see a two-fold increase compared to 2006. In 2021, there were up to 96, which is up to five times more than in 2010. The trend is therefore significantly increasing and is characterized by the linear equation $y = 7,0979x + 10,864$. From the above, we can see the assumption of growth in the next period as well, and in 2025 the number of breweries in Slovakia could reach the limit of 130 breweries.

As part of our survey, which was carried out on a selected sample of brewery owners, we investigated the reasons why they invested in building a new brewery. The following can therefore be identified as the most common reasons:

- a good investment opportunity – due to the growing demand for craft beer and low competition, the owners see a promising prospect of a quick return on invested funds,
- an effort to reduce risk through the diversification of their existing business activities, as many owners are already running other businesses and see the brewery as an opportunity to support their original business,
- love of beer – many enthusiasts have extended their love to create their own brewery,
- development of "homebrewing" of beer - before some owners opened their own business, they brewed their own beer at home as a hobby and wanted to take their hobby to a higher level.

4. Conclusion and discussion

The development of craft brewing was conditioned by a significant decrease in beer consumption as a result of less variety in the offer on the market, which arose due to globalization, when almost all important Slovak breweries were bought by multinational brewing concerns as part of acquisitions. The same was the case, for example, in Hungary, where three multinational companies dominate the beer market (Jantyik, Balogh and Torok, 2021) and in Poland, where the aforementioned multinational concerns also dominate (Wojtyra, Grudzień and Lichota, 2020). This resulted in the homogenization of beer as a

product (Howard, 2014). Craft breweries thus helped to expand the range of beer types and the market and introduced beer types that had been significantly marginalized in Slovakia until then. IPA, APA, Stout, Porter and other beers, which were not a standard product available on the Slovak market, were very popular among customers. As a result of the change in customer preferences, there is a space on the market for small independent craft breweries that produce beer in small quantities, but in greater diversity, while using traditional recipes and high-quality raw materials (Carroll and Swaminathan, 2000) For this reason, the number of breweries in the period 2010-2021 increased fivefold to the current level of 96 breweries. We assume that there is still room on the market for the creation of more new breweries, and in the course of the next 5 years, an average of 5-8 will be added annually. A very similar development can be seen in other countries. In traditional beer countries, consumption decreased e.g. it was 24% lower in Belgium, 8% lower in the Czech Republic, 13% lower in Germany and 9% lower in the Netherlands (all comparisons of 2021 versus 2010). But in some rather wine-producing countries, this consumption has increased slightly. For example in France by 13%, in Spain by 20% and in Italy by 14% (compared to 2010). As for the number of breweries, the trend is growing in other countries as well, and more new breweries are still being created. In the mentioned countries, there was a 3- to 6-fold increase. It can therefore be concluded that, despite the decrease in beer consumption and the subsequent decrease in beer production, it can be seen that a "craft beer revolution" has occurred, which offers beers with a higher price, but on the other hand, also with a higher range of offered types.

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Taste on Tap: Mapping the Generation Z's Beer Preferences

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Abstract

The brewing industry is undergoing significant changes due to emerging market trends, therefore understanding the new consumer requirements and shift in the behaviour of beer consumers towards preferences in beer consumption is inevitable. The aim of the paper is to examine the consumer preferences for various beer types with focus on the Generation Z. To fulfil the aim, a questionnaire survey was conducted on a sample of 366 young respondents from Slovakia. The consumer study revealed significant differences in Generation Z's beer preferences, with a strong predilection for lager, followed by beer specials, flavoured beers, IPA, and APA. Conversely, Porter, Stout, dark beer, Weiz, and non-alcoholic beverages were less preferred. The results of the study point to significant differences in consumer preferences for various beer types among Generation Z. These findings can be valuable for beer-producing companies, offering insights into meeting the changing demands of young consumers. Furthermore, manufacturers can leverage the study's results to develop innovative products, including various types of craft beer.

Keywords: beer consumption, consumer preferences, Slovakia, young segment

JEL Classification: Q13, M31, M21

1. Introduction

Beer, as one of the oldest, most consumed and popular alcoholic beverages worldwide, is produced by a fermentation process with four basic ingredients: water, malts (and their additives), yeast and hops (Kozłowski et al., 2021; Veljovic et al., 2015; Caon et al., 2021; Gómez-Corona et al., 2016a; Kawa-Rygielska et al., 2019; Salanță et al., 2020; Mascia et al., 2014; Quesada-Molina et al., 2019). The brewing process enriches beer with micronutrients, and beer is a source of essential minerals such as calcium, iron, zinc, magnesium, phosphorus, potassium, sodium, copper, manganese, selenium, fluoride and silicon (Quesada-Molina et al. 2019). Beer is also distinguished by the presence of B vitamins, supports the immune system and brings other benefits, such as strengthening the nervous system and alleviating skin and digestive problems (Rogovská and Masár, 2018). Regular, moderate consumption of beer is recommended as a non-invasive preventive measure against neurodegenerative diseases, including Alzheimer's disease (Sánchez-Muniz et al., 2019). In addition, beer is also a source of antioxidants, which are crucial in warding off atherosclerosis and cancer. Numerous other studies also point to the potential health benefits of beer consumption, including cardiovascular protection, resistance to atherosclerosis, and a reduced risk of dementia (Olšovská, 2014; Sohrabvandi et al., 2012; Marcos et al., 2021).

The global trend of overall increasing beer consumption is primarily influenced by increased consumption in developing regions, whereas consumption in developed regions is either

stagnant or declining (Pokrivčák, 2019). Colen and Swinnen (2010) highlight that in countries traditionally characterized as "beer drinking nations," the proportion of beer in total alcohol consumption has decreased. In contrast, in countries traditionally inclined towards wine or spirits, the trend related to beer consumption is increasing. Beer consumption is determined by economic factors, political factors, globalization, as well as climatic conditions, cultural factors, and pricing (Colen and Swinnen, 2010; Savov and Szarková, 2022). Svatošová et al. (2021) add that beer consumption is also affected by consumer behavior and consumers make decisions based on taste, brand quality, and country of origin, with an emphasis on preferences of domestic producers. Aquilani et al. (2015) emphasize that individuals who appreciate beer prefer its quality and consider it as a significant factor. These consumers are distinguished by their inclination to explore novel flavours and engage in experiences related to beer, as highlighted by Chrysochou (2014) and Gómez-Corona (2016a). Furthermore, Yang et al. (2002) found that the sensation of relaxation is likely the primary emotion associated with beer consumption.

In the past few years, there has been a shift in the behaviour of beer consumers, as they have become increasingly informed, sophisticated, and demanding in their approach to the emerging beverage culture. These consumers prefer the quality and characteristics of ingredients in their beer choices, are interested in small-scale production and a slower fermentation process. Additionally, consumers who appreciate these qualities are typically willing to pay higher prices for these distinctive products, also known as craft beers (Carvalho et al. 2018; Murray and O'Neill, 2012; Aquilani et al., 2015; Sebrae, 2015; Gómez-Corona, 2016b). Beer producers reflect consumer demands regarding craft beer and add new flavours and ingredients to beer (Lazzari et al., 2021). Pindešová et al. (2021) emphasize that the increasing interest of consumers in the consumption of craft beer caused by changes in consumer preferences and lifestyle creates new opportunities for the beer market and the production of new innovative products.

For the future direction of the beer market, it is essential to know the determinants affecting consumer preferences related to beer consumption. On this background, the aim of the paper is to examine the consumer preferences for various beer types. Based on the above considerations and the aim of this paper, the following research questions were formulated:

RQ1: What are the consumer preferences for various beer types among Generation Z?

RQ2: What are the consumption patterns for various beer types among Generation Z?

2. Data and Methods

Consumer study is based on primary data acquired by conducting an online survey within the period 2019 – 2021. In total, 366 beer consumers participated in the survey. The research sample comprised only respondents between 18 – 25 years. From socio-demographic point of view, the research sample consists of 51,91% males living in urban areas (52,73%) with either secondary education (65,30%) or higher education (32,24%). The respondents evaluated their consumption patterns and beer preferences using 5-points Likert scale (1 – totally disagree, 3 – neutral attitude; 5 – totally agree). Agreement or disagreement was expressed for various beer types. Obtained data were processed and statistically tested in XLSTAT 2022.4.1 by using non-parametric tests such as Friedman test as well as multiple pairwise comparisons using Nemenyi's procedure.

3. Results and Discussion

The results showed statistically significant differences in consumer preferences for various beer types (Friedman test, p -value = $<0,0001$). Demsar plot showed (Fig. 1) that the most preferred beer types for Generation Z is lager, followed by beer specials, flavoured beers and IPA and APA beers. The least preferred beers were Porter, Stout, dark beer and Weiz

followed by non-alcoholic beers. The similar results were obtained in case of consumption patterns of different beer types. Friedman test identified statistically significant differences in respondents' evaluations among various beer types ($p\text{-value} = <0,0001$). Furthermore, Nemenyi's procedure revealed that generation Z. Results showed (Fig. 2) that this generation mostly drinks lager, followed by beer specials, flavoured beers and IPA and APA beers. Porter, Stout, dark beer and Weiz obtained the lowest agreement towards frequent consumption.

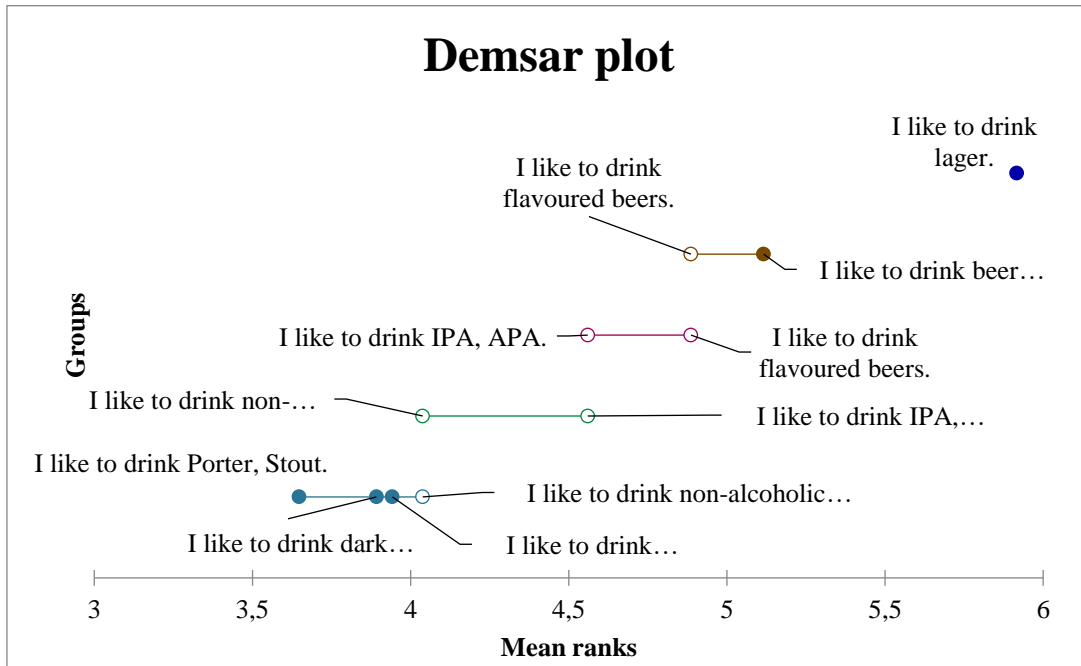


Figure 1 Consumer preferences for various beer types
Source: own processing, Xlstat 2023

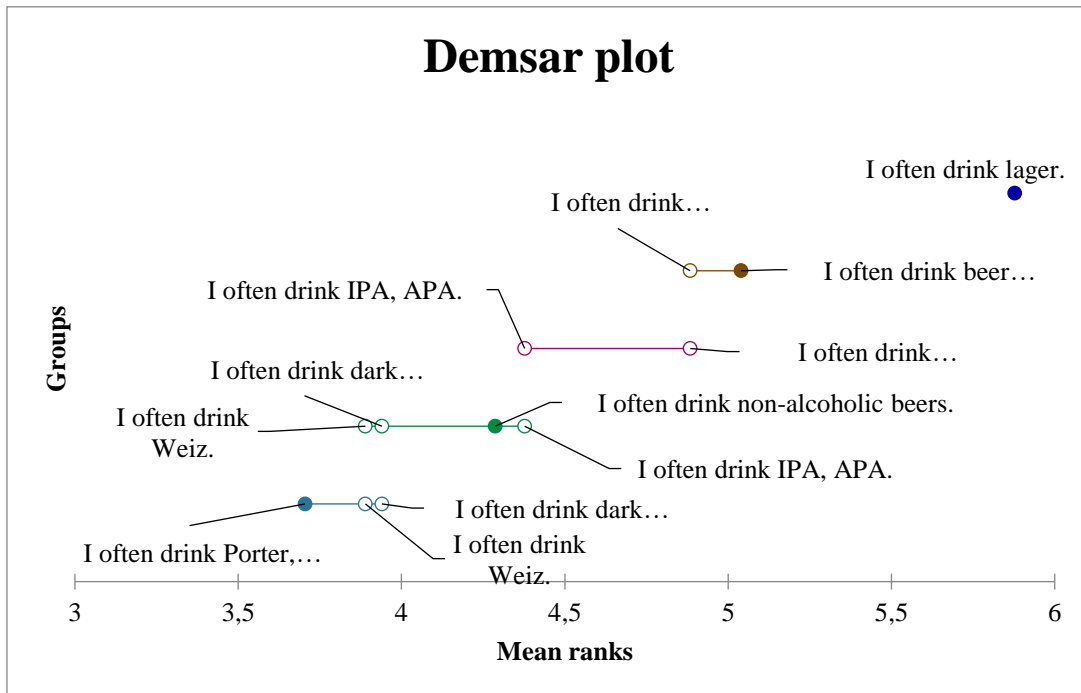


Figure 2 Consumption patterns for various beer types
Source: own processing, Xlstat 2023

Consumer behaviour on the beer market is influenced by a number of factors, as revealed by several studies. Gjonbalaj et al. (2010) point to the importance of pricing strategies in the beer market and state that price is a significant factor in the purchase and consumption of beer compared to other factors. Marshal and Chassin (2000) emphasize the influence of social groups on beer consumption among adolescents and found a strong influence of peers consuming alcoholic beverages on the choice of beverages among adolescents. Jung (1995) also investigated the influence of parents on the consumption of beer in their children. Palfrey and Gasser (2008) also dealt with beer consumption among the younger generation of consumers and point to the increasing influence of technology and the internet. Finally, Pindešová et al. (2022) emphasize the importance of taste for beer consumption and identify beer specialties, India as the most preferred beer styles among consumers. A comprehensive understanding of consumer behaviour can initiate breweries to consider various factors in creating effective marketing strategies, considering product, pricing and communication strategies.

4. Conclusion

The study found significant differences in consumer preferences for various beer types among Generation Z. The lager was the most preferred beer type, followed by beer specials, flavoured beers, IPA, and APA. The least preferred were Porter, Stout, dark beer, Weiz, and non-alcoholic beers. Moreover, results demonstrated a prevailing inclination within this cohort towards the consumption of lager, with subsequent preferences for beer specials, flavoured beers, IPA, and APA. In contrast, Porter, Stout, dark beer, and Weiz acquired the least agreement in terms of frequent consumption.

Author Contributions: For research articles with several authors, a short paragraph specifying their individual contributions must be provided. Conceptualization, K.P, P.Š., D.P.; data investigation, D.P.; methodology, K.P, P.Š., D.P.; software analysis, P.Š.; formal analysis, K.P, P.Š.; resources, K.P, P.Š.; writing, K.P, P.Š., D.P.; visualization, P.Š.; supervision, K.P, P.Š.; project administration, K.P, P.Š.; funding acquisition, K.P, P.Š.

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Sebestačnosť Slovenskej republiky vo vertikále výroby piva

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Abstrakt

Cieľom nášho príspevku je kvantifikovať a zhodnotiť mieru sebestačnosti Slovenskej republiky v celej vertikále výroby piva, t.j. stanovenie miery sebestačnosti za poľnohospodárske suroviny pre pivovarnícky priemysel, za slad ako medziprodukt ako aj za pivo ako finálny potravinársky produkt. Vykonaná analýza odhalila a potvrdila funkčnosť prepojenia poľnohospodárskej prvovýroby s pivovarníckym priemyslom. Vysoko prebytková produkcia sladu vytvára vhodné podmienky pre rozšírenie pestovania sladovníckeho jačmeňa na Slovensku. Zároveň vytvára aj dostatočnú surovinovú základňu pre rozšírenie produkcie slovenského piva.

KLúčové slová: miera sebestačnosti, produkcia, spotreba, slad, pivo

JEL klasifikácia: Q02, Q11, Q17

1. Úvod

Potravinová sebestačnosť je často používaný pojem. Napriek tomu neexistuje jednotná a univerzálna definícia tohto pojmu. Existuje viacero chápaní potravinovej sebestačnosti, ktoré možno uplatniť na rôznych úrovniach analýzy (O'Hagen, 1976). V najzákladnejšom tvare FAO zadefinovalo potravinovú sebestačnosť nasledovne: "Pod pojmom potravinová sebestačnosť sa vo všeobecnosti rozumie miera, do akej môže krajina uspokojiť svoje potravinové potreby z vlastnej domácej produkcie" (FAO, 1999). Táto najzákladnejšia definícia môže platiť na úrovni jednotlivca, regiónu alebo krajiny.

Ministerstvo pôdohospodárstva a rozvoja vidieka SR vo svojom koncepčnom materiáli, vypracovanom v súlade Programovým vyhlásením vlády Slovenskej republiky na obdobie rokov 2020 – 2024 pre oblasť pôdohospodárstva (MPRV SR, 2020), rozlišuje dva ukazovatele sebestačnosti: produkčnú a potravinovú sebestačnosť (MPRV SR, 2021). Produkčná sebestačnosť nám vyjadruje, do akej miery dokáže poľnohospodárska prvovýroba z vlastnej produkcie uspokojiť dopyt a potravinové potreby domácich spotrebiteľov. Potravinová sebestačnosť nám vyjadruje, do akej miery dokáže potravinársky priemysel z vlastnej produkcie uspokojiť potreby domácich spotrebiteľov (Gálik a kol., 2022).

Domáca produkcia rastlinných poľnohospodárskych komodít je determinovaná ich zberovou plochou a intenzitou ich výroby, meranou dosahovanými hektárovými výnosmi. Pri živočíšnych komoditách je produkcia determinovaná početnými stavmi hospodárskych zvierat a dosahovanými produkčnými parametrami. Na druhej strane domáca spotreba je ovplyvnená nielen spotrebiteľskými preferenciami a návykmi, ale aj výkonnosťou spracovateľského potravinárskeho priemyslu. Zabezpečenie dostatočného objemu potravín pre svojich obyvateľov je jedným zo strategických priorít všetkých krajín sveta. Avšak

mieru, do akej tento strategický cieľ dokážu naplniť, determinujú existujúce spracovateľské kapacity, štruktúra, ako aj výkonnosť a efektívnosť potravinárskeho priemyslu (Pokrivčák, Gálik & Tóth, 2022).

2. Údaje a metódy

Cieľom nášho výskumu je kvantifikovať a zhodnotiť mieru sebestačnosti Slovenskej republiky v celej vertikále výroby piva. Miera sebestačnosti sa zvyčajne počíta pre konkrétnu komoditu alebo komoditnú skupinu. V našom príspevku sa zameriame na stanovenie miery sebestačnosti za poľnohospodárske suroviny pre pivovarnícky priemysel, za slad ako medziprodukt ako aj za finálny potravinársky produkt, t.j. pivo. Obdobie, na ktoré sa vzťahujú vykonané analýzy, trvalo od roku 2017 do roku 2022.

Pri výpočte produkčnej sebestačnosti sladovníckeho jačmeňa vychádzame zo zostavených bilancií, ktoré sú od roku 2022 každoročne spracované a zverejňované Ministerstvom pôdohospodárstva a rozvoja vidieka SR v rámci situačnej a výhľadovej správy Obilniny (Repka, 2023). Na základe údajov z komoditných bilancií je produkčná sebestačnosť vyjadrená vzťahom (Matošková, Gálik & Jamborová, 2015):

Produkčná sebestačnosť = hrubá domáca produkcia x 100 / bilančná spotreba
(1)

S využitím údajov o produkcii potravinárskeho priemyslu (Radela, 2023, rezortný výkaz MPRV SR Potrav) je možné stanoviť a zhodnotiť produkčnú sebestačnosť sladu podľa vzťahu (Matošková a kol. 2020):

Produkčná sebestačnosť = výroba x 100 / (výroba – export + import)
(2)

Údaje za zahraničný obchod SR sme použili z databáz Eurostatu (2023) za presne definovanú položku: HS 1107 (Gálik a kol., 2022).

V rámci rezortného výkazu MPRV SR Potrav sa sleduje aj produkcia piva v Slovenskej republike. Pomocou vyššie uvedeného vzťahu (2) sme zhodnotili mieru potravinovej sebestačnosti piva na Slovensku. Údaje za zahraničný obchod SR sme použili z databáz Eurostatu (2023) za presne definovanú položku: HS 2203 (Gálik a kol., 2022). Vzhľadom k tomu, že produkcia je vykazovaná v hektolitroch a údaje zahraničného obchodu v tonách, na prepočet použitých údajov na tony sme použili jednoduchý vzťah: 10 hl = 1 t.

Detailné údaje rezortného výkazu MPRV SR Potrav nám umožňujú stanoviť aj mieru potenciálnej potravinovej sebestačnosti, ktorá vyjadruje podiel teoretickej výroby piva zodpovedajúcej plne využitým výrobným kapacitám na ich súčasnej spotrebe (Matošková a kol. 2020):

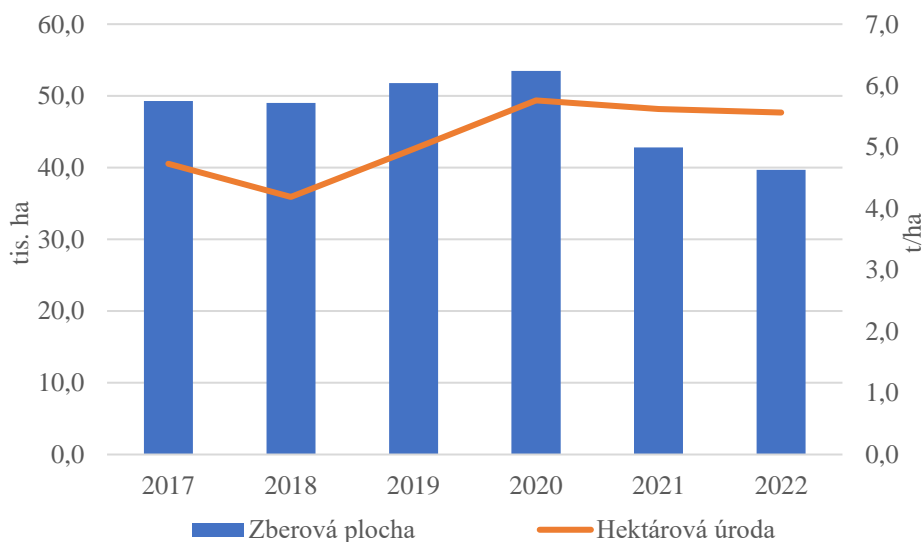
Potenciálna sebestačnosť = výrobné kapacity x 100 / (výroba - vývoz + dovoz)
(3)

3. Výsledky a diskusia

Pivovarnícko-sladovnícky priemysel patrí z hľadiska humánnej výživy k doplnkovým odborom potravinárskeho priemyslu. Z ekonomického hľadiska však patrí k nosným odvetviam potravinárskeho priemyslu na Slovensku, nakoľko pravidelne dosahuje kladné výsledky hospodárenia. Produktivita práce z pridanej hodnoty, ktorá patrí k najvýznamnejším ukazovateľom ekonomickej konkurencieschopnosti odvetvia dvojnásobne

prevyšuje priemerné hodnoty potravinárskeho priemyslu. Nadpriemerné hodnoty dosahuje aj pri ukazovateľoch rentability. Zároveň dlhodobo dosahuje kladné saldo obchodnej bilancie, ktorého hodnota však v čase klesá. Na zahraničných trhoch sme vysoko konkurencieschopní so sladom. Rezervy sú však pri zahranično-obchodnej výmene s pivom (Matošková & Gálik, 2021). V neposlednom rade sa jedná o odbor potravinárskeho priemyslu s priamou väzbou na poľnohospodársku prvovýrobu.

Základnou surovinou pri výrobe piva je sladovnícky jačmeň. V pestovaní kvalitného a vo svete známeho sladovníckeho jačmeňa má Slovenská republika dlhoročnú tradíciu. Z obrázka 1 vyplýva, že zberová plocha sladovníckeho jačmeňa sa pohybovala na úrovni 50 tis. ha. Až v dvoch posledných sledovaných rokoch sa jeho výmera výrazne znížila o zhruba 10 tis. ha. (index 2022 / 2018 = 80,5 %). Napriek tomu sa celková produkcia sladovníckeho jačmeňa výrazne nezmenila (Tabuľka 1). Pokiaľ v roku 2018 sme v SR vyprodukovali 233,2 tis. t sladovníckeho jačmeňa, v roku 2022 jeho produkcia dosiahla 220,9 tis. t (pokles len o 5,3 %). Rozhodujúcim faktorom relatívne stabilnej produkcie je neustále sa zvyšujúca intenzita pestovania sladovníckeho jačmeňa, ktorá sa prejavuje rastúcim hektárovým výnosom (index 2022 / 2018 = 117,5 %).



Obrázok 1: Vývoj zberových plôch a hektárových úrod sladovníckeho jačmeňa
Zdroj: Repka (2023), vlastné spracovanie

Z bilančnej tabuľky 1 je zrejmé, že stagnujúca domáca produkcia sladovníckeho jačmeňa nepokrývala neustále sa zvyšujúci domáci dopyt. Za uplynulých 6 rokov sa domáca spotreba sladovníckeho jačmeňa v SR zvýšila až o 59,2 tis. t, t.j. až o 19,8 %. Rast domácej spotreby mal za následok na jednej strane pozvoľný útlm nášho exportu sladovníckeho jačmeňa a na druhej strane našu zvyšujúcu sa závislosť na jeho dovoze. Objem dovozu sa pohyboval na úrovni 80 tis. t, pričom v roku 2019 sme doviezli rekordné množstvo sladovníckeho jačmeňa, až 120 tis. t. Pokiaľ v bázickom roku 2017 sme domácou produkciou dokázali kryť viac ako 78 % domácej spotreby, v roku 2022 sa naša produkčná sebestačnosť pohybovala už len na úrovni 62 %, t.j. celkový pokles až o 16 p. b. Klesajúci trend sebestačnosti narušila len rekordná produkcia sladovníckeho jačmeňa v roku 2020, avšak išlo len o ojedinelý jav.

Tabuľka 1: Bilancia sladovníckeho jarného a ozimného jačmeňa (v tis. t)

	2017	2018	2019	2020	2021	2022
Produkcia	233,2	205,2	257,5	296,2	231,3	220,9
Domáca spotreba	298,3	324,0	339,0	332,7	347,2	357,5
Dovoz	80,4	88,8	120,4	65,2	61,6	81,3
Vývoz	23,8	4,6	21,6	33,3	13,0	14,2
Produkčná sebestačnosť (%)	78,2	63,3	76,0	89,0	66,6	61,8

Zdroj: Repka (2023)

Priama väzba medzi pivovarnícko-sladovníckym priemyslom a poľnohospodárskou prvovýrobou spočíva aj v pestovaní a produkcii chmeľu. Podľa údajov Štatistického úradu SR sa výmera chmeľu v rokoch 2017-2019 pohybovala na úrovni 140 ha a produkcia chmeľových šištičiek dosahovala úroveň 108 ton. V ostatných troch rokoch však zberová plocha chmeľu poklesla natoľko, že ju už ŠÚ SR nezverejňuje, nakoľko sa jedná o dôverný údaj. Z uvedeného dôvodu nie je možné zostaviť ani zjednodušenú bilanciu chmeľu na Slovensku, z ktorej by sme mohli jednoznačne vyjadriť aj našu mieru produkčnej sebestačnosti. Napriek tomu nám údaje o zahranično-obchodnej SR umožňujú odhadnúť, ako sa vyvíjala miera sebestačnosti SR pri chmeli (Tabuľka 2). Pokiaľ v bázičkom roku 2017 sme dosiahli takmer vyrovnanú obchodnú bilanciu s chmeľom, v nasledujúcich rokoch sa situácia dramaticky zmenila. Objem exportu sa každoročne dramaticky znižoval a v roku 2022 sme už nezaznamenali žiadny exportu chmeľu zo Slovenska. Objem dovozu sa až do roku 2019 výrazne znižoval, avšak v posledných troch rokoch, v dôsledku odhadovanému poklesu domácej produkcie a zvýšenému domácemu dopytu, objem dovozu vykazuje rastúci trend. Chmeľ dovážame primárne z Nemecka a Českej republiky, ktoré sú tradičnými pestovateľmi chmeľu v Európe, ale aj z Maďarska či Slovinska. Z uvedených údajov odhadujeme, že miera produkčnej sebestačnosti SR pri chmeli sa dramaticky znížila z cca 76 % v roku 2017 až na cca 29 % v roku 2022, t.j. až o 47 p. b.

Tabuľka 2: Zahraničný obchod SR s chmeľom (v t)

	2017	2018	2019	2020	2021	2022
Dovoz	264,9	120,5	85,3	155,0	86,6	183,2
Vývoz	232,0	72,9	92,4	22,4	5,6	0,0

Zdroj: Eurostat (2023)

Pivovarnícko-sladovnícky priemysel je charakteristický dvojstupňovým spracovaním poľnohospodárskych surovín – primárne spracovania predstavuje výrobu sladu a pri sekundárnom spracovaní ide o výrobu samotného piva. Rezortný výkaz MPRV SR Potrav nám poskytuje údaje nielen o produkcii piva na Slovensku, ale aj o výrobe sladu, čo nám umožňuje zostaviť ich zjednodušenú bilanciu.

Tabuľka 3 odhaľuje výrazne rastúci trend v produkcii sladu na Slovensku, ktorá sa za uplynulých 6 rokov zvýšila až o takmer 39 tis. t (o 15,9 %). V rovnakom období domáca spotreba stagnovala a oscilovala okolo úrovne 40 tis. t. Uvedený vývoj sa v konečnom dôsledku prejavil v masívnom prebytku produkcie, ktorú je nevyhnutné umiestniť na zahraničných trhoch. Objem exportu dosahuje v priemere až 86 % objemu domácej produkcie sladu. S odbytom nadprodukcie sladu Slovensko nemá problém, nakoľko sa svojou kvalitou už etabloval na poľskom, českom či rakúskom trhu, ale je oň záujem aj na

maďarskom, slovinskom či rumunskom trhu. Miera produkčnej sebestačnosti sladu spolu s olejninami patrí k najvyšším spomedzi všetkých slovenských agropotravinárskych surovín a medziproduktov. Objem produkcie sladu je štvor až jedenásť násobne vyšší ako objem domácej spotreby.

Tabuľka 3: Bilancia sladu (v t)

	2017	2018	2019	2020	2021	2022
Produkcia	242 294	253 986	283 484	254 775	279 031	280 820
Dovoz	9 252	5 434	3 927	2 413	3 583	1 479
Vývoz	213 775	226 010	217 147	216 658	237 965	256 605
Domáca spotreba	37 771	33 410	70 264	40 530	44 649	25 693
Produkčná sebestačnosť (%)	641,5	760,2	403,5	628,6	624,9	1 093,0

Zdroj: Radela (2023), Eurostat (2023), vlastné prepočty

Medzinárodný záujem o slovenský slad potvrdzujú aj údaje International Trade Centre v Ženeve (Tabuľka 4). Takmer 44 % celosvetového exportu sladu ovláda Francúzsko, Belgicko, Austrália a Nemecko. Slovenská republika je jedenástym najväčším svetovým exportérom sladu hneď za Spojenými štátmi americkými a pred Českou republikou. V priemere až 2,9 % objemu svetového exportu sladu pochádza zo Slovenska. V štruktúre celého agropotravinárskeho zahraničného obchodu Slovenskej republiky žiadny agropotravinársky výrobok nedosahuje tak vysoký podiel na svetovom objeme vývozu, čo len potvrdzuje význam a špecifickú pozíciu sladu v rámci poľnohospodárskej a potravinárskej výroby.

Tabuľka 4: Najväčší svetový exportéri sladu (v t)

	2017	2018	2019	2020	2021	2022
Svet	7 647 586	7 736 965	7 803 372	7 406 402	8 670 743	8 347 067
Francúzsko	1 066 927	1 094 401	1 139 552	1 068 257	1 104 178	1 124 513
Belgicko	900 053	889 483	878 643	809 131	975 228	1 063 621
Austrália	598 496	666 450	751 062	689 252	1 060 367	917 645
Nemecko	608 131	646 838	691 552	631 758	664 702	694 751
Argentína	523 491	381 922	542 918	485 976	602 063	600 829
Kanada	640 906	571 765	589 625	516 759	545 272	520 296
Čína	389 594	467 488	489 235	373 047	361 291	478 747
Uruguaj	357 886	394 311	404 382	394 552	388 138	415 776
Holandsko	246 928	263 402	298 604	324 444	400 837	380 978
USA	474 458	436 064	407 068	339 223	413 044	283 472
Slovenská republika	213 775	226 011	217 147	216 658	237 965	256 605
Česká republika	240 207	251 292	225 647	188 415	241 307	217 650

Zdroj: International Trade Centre (2023)

Tabuľka 5: Bilancia piva (v t)

	2017	2018	2019	2020	2021	2022
Produkcia	302 950	261 558	322 858	304 106	312 600	316 389
Dovoz	159 016	199 885	172 276	171 022	145 951	156 095
Vývoz	11 549	9 011	8 878	35 302	22 381	36 983
Domáca spotreba	450 417	452 432	486 256	439 826	436 169	435 501
Potravinová sebestačnosť (%)	67,3	57,8	66,4	69,1	71,7	72,6
Výrobné kapacity	420 363	409 315	425 528	439 725	381 914	511 016
Potenciálna sebestačnosť (v %)	93,3	90,5	87,5	100,0	87,6	117,3

Zdroj: Radela (2023), Eurostat (2023), vlastné prepočty

Finálnym výrobkom pivovarnícko-sladovníckeho priemyslu s najvyššou pridanou hodnotou je pivo. Tabuľka 5 zachytáva zjednodušenú bilanciu piva pre SR. Odhadovaná domáca spotreba je pomerne stabilná a pohybuje sa na úrovni 450 tis. t. Z údajov rezortného výkazu MPRV SR Potrav vyplýva, že aj objem produkcie v uplynulých 6 rokoch, s výnimkou roku 2018, vykazuje stabilný trend na úrovni 315 tis. t. Z uvedeného vyplýva, že časť domácej spotreby musí byť sanovaná dovozom piva zo zahraničia. Objem dovozu vykazuje kolísavý trend, čo je spôsobené značnými výkyvmi v objeme nášho exportu. Miera potravinovej sebestačnosti SR vykazuje mierne rastúci trend aj vďaka licenčnej výrobe zahraničných značiek pív v slovenských pivovaroch. Napriek tomu v priemere až tretinu domácej spotreby je nutné kryť dovozom piva z Českej republiky, Poľska, Nemecka či Maďarska. Rezortný výkaz MPRV SR Potrav okrem údajov o produkcii piva obsahuje aj údaje o výrobných kapacitách pivovarnícko-sladovníckeho priemyslu. Deklarované výrobné kapacity sú zhruba o tretinu vyššie ako vykazovaný objem produkcie piva. Pri súčasnom objeme spotreby a plnom využití existujúcich výrobných kapacít by sa miera potravinovej sebestačnosti SR pohybovala na úrovni 90 – 100 %, pričom za rok 2022 sa blíži až k 120 %.

4. Záver

Potravinová vertikála v rámci pivovarnícko-sladovníckeho priemyslu patrí aj napriek určitým rezervám medzi funkčné a perspektívne vertikály v SR. Pre odhalenie rezerv v jednotlivých článkoch potravinovej vertikály piva sme sa v príspevku orientovali na stanovenie miery sebestačnosti za poľnohospodárske suroviny pre pivovarnícky priemysel, za slad ako medziprodukt ako aj za finálny potravinársky produkt, t.j. pivo. Z pohľadu poľnohospodárskej prvovýroby má, aj napriek výrazne vyšším nárokom na výživu a ošetrovanie, sladovnícky jačmeň nezastupiteľné miesto v štruktúre rastlinnej výroby. Avšak domáca produkcia sladovníckeho jačmeňa nie je schopná v plnej miere kryť rastúci domáci dopyt. Z uvedeného dôvodu je rozšírenie pestovania sladovníckeho jačmeňa vhodnou alternatívou k pestovaniu pšenice a kukurice, ktoré sú v poslednom období vystavené silnému konkurenčnému tlaku zo strany obilia z Ukrajiny. Navyše stabilne vysoko prebytková výroba sladu na Slovensku vytvára podmienky pre rozšírenie pestovania sladovníckeho jačmeňa. Podstatne zložitejšia situácia je v prípade nízkej miery sebestačnosti vo výrobe chmeľu. Vysoké technologické nároky a silná zahraničná konkurencia nevytvára predpoklady citeľného zvýšenia jeho domácej produkcie.

Z pohľadu spracovaných produktov Slovensko dosahuje extrémne vysokú mieru sebestačnosti pri slade na úkor finálneho produktu s najvyššou pridanou hodnotou, ktorým je pivo. Na druhej strane vysoká výkonnosť slovenských sladovní vytvára predpoklad na zvyšovanie produkcie piva na Slovensku z lokálnych surovín. Z dostupných údajov rezortného výkazu MPRV SR Potrav vyplynulo, že zvyšovanie produkcie piva by nevyžadovalo značné stavebné a výrobné investície, ale postačila by aktivácia existujúcich a zatiaľ nevyužívaných výrobných kapacít.

Pod'akovanie

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Evolving CSR Strategies in Agri-Food Businesses: Examination of Biofarma Charolais and its Microbrewery Eliáš

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Abstract

Corporate social responsibility (CSR) has become a prominent concept in recent years, with businesses increasingly recognizing their responsibility to society encompassing economic, social, and environmental dimensions. Evidence suggests that CSR practices can positively impact a company's performance, making it a subject of growing interest and importance. Business ethics and ethical business activities are considered to be a part of responsible management and CSR. Responsible and ethical management is key for companies in every industry, but there are specific business activities where questions regarding ethicality arise more. One of these are food industry, especially alcohol production such as breweries. This paper presents a case study of Biofarma Charolais, a small Slovak company engaged in agricultural primarily production and food processing. Microbrewery is one of its key activities. The study aims to assess the company's commitment to CSR activities across the triple bottom-line dimensions, namely social, environmental, and economic aspects. The evaluation is based on the CEO's assessment of selected responsible and ethical activities. A qualitative research design was employed, and data were gathered through guided interviews with the CEO. Open-ended questions were used to explore the company's CSR practices comprehensively. The CEO evaluated the company's commitment to each CSR activity using a Likert scale. Data analysis involved transcription, coding, and thematic identification of CSR activities. Biofarma Charolais demonstrated a very strong commitment to social, environmental, and economic CSR activities and ethical management. The company actively promoted workplace equality, supported local communities, and rejected child labor. In environmental CSR, Biofarma Charolais invested in green technologies adopted ecological production practices, and prioritized waste reduction and resource conservation. In terms of economic CSR, the company emphasized transparency, protected intellectual property, and contributed to society through inclusive employment and supply chain loyalty. The case study provides insights into the CSR practices of a small agricultural company, shedding light on the benefits of incorporating CSR across the triple bottom-line dimensions. The evaluation by the CEO offers an internal perspective on the company's commitment to responsible business practices. The findings contribute to understanding the role of CSR in improving business performance and inform other companies, especially small agricultural businesses, about the importance and benefits of CSR integration.

Keywords: Corporate Social Responsibility (CSR), Biofarma Charolais, Sustainability Practices, Diversified Food Processing, Eliáš Brewery

JEL Classification: M14, Q13, Q56

1. Introduction

Corporate social responsibility (CSR) is a concept that has been gaining increasing attention in recent years. CSR refers to the responsibility that businesses have to society. This responsibility includes economic, social, and environmental dimensions. There is a growing body of evidence that suggests that CSR can have a positive impact on a company's results. For example, a study by the Harvard Business Review found that companies with strong CSR practices outperformed their peers by 15% over five years. This paper presents a case study of Biofarma Charolais, a Slovak company that breeds and raises cattle. But they did not stop at the gates of primary production. The company goes further and includes food processing in its activities. They produce dried apples in diverse forms, also they are producing jams and marmalades and recently they add microbrewing into their production portfolio. Biofarma Charolais is known for its high-quality products and its commitment to CSR and ethical processing. Farms in very well-known for their engagement in the community and various activities toward stakeholders. It is not just a good working environment for employees, they provide various activities for the local community.

Without a doubt, we can say that corporate social responsibility and sustainability are currently important trends in the corporate sphere. As Maldonado-Erazo, C.P. et al (2020) state, the transformation is fuelled by a shift in social awareness; organizations can no longer pursue profits indiscriminately without considering the consequences of their strategies and actions on the environment, as well as in the economic and social domains. It is probably for this reason that the concept of corporate social responsibility and the related effects on the company, society, and the individual appears quite often in the scientific sphere, and many experts in the field deal with the issue of corporate social responsibility in-depth and deal with the mutual relationship and connection with other areas. For example, Mariani, M.M. et al (2023) state, that there has been a notable expansion in the domain of Corporate Social Responsibility within family-owned businesses in recent times. The authors further add that the most researched subjects include family participation, corporate governance, and sustainability. We can find a similar opinion in the public on Lulewicz-Sas, A. (2017). The author states, that assessing socially responsible activities stands out as a crucial and challenging aspect addressed within the realm of management science.

As part of corporate social responsibility, we increasingly come across the opinion that the reuse of products and their recycling contribute to reducing the consumption of natural resources, minimizing the negative impact on the environment, and contributing to reducing the loss of biodiversity. Schifani, G. et al (2018) state, Circular Economy is centred around the creation and modification of processes and products to minimize adverse environmental effects. This involves decreasing reliance on non-renewable resources, prolonging product durability, refining waste management, and fostering a market for secondary raw materials. In the field of management, only a limited number of contributions delve into Circular Economy as a model that companies can adopt from a business model standpoint.

The Beer is a fermented, low-alcohol beverage produced from grain malt, water, and hops using brewer's yeast. Kenechukwu, A. (2019) describes beer as follows: beer is an alcoholic drink derived from the brewing and fermentation of cereals. When consumed in moderation, it is believed to offer various health advantages. The use of different yeast strains and alterations in the brewing process has led to the creation of various types of beer. Consumer interest in this drink is still high and relatively stable over the years. More and more often, we encounter consumers' interest in beers that were consumed less or minimally in the past. For example, Brányik, T. et al (2012) states the growing concern among consumers regarding health and alcohol-related problems is driving breweries to diversify their product range by incorporating options with lower alcohol content. Calvo-Porrall, C. (2019) delivers

brewers must crucially recognize and comprehend consumer segments along with their consumption patterns to effectively tailor their focus to diverse priorities and preferences. We can also see this fact in a significant change regarding beer producers. In the past, beer producers were primarily large multinational companies. Currently, this trend is changing significantly. Melewar, T.C. - Skinner, H. (2020) state the European beer brewing sector is characterized by a dichotomy. On one side, there are small, frequently family-owned enterprises that demonstrate robust entrepreneurial and professional business management skills, comparable to those seen in various industries. On the opposite end of the spectrum, there are large multinational corporations that typically exert significant influence over market share.

2. Data and Methods

This case study was conducted using a variety of methods, including interviews with the CEO of the company, document analysis, and excursion. Document analysis was conducted on the internal documentation of the company. The subject does not formalize specific CSR reports or other similar document.

This study employed a qualitative research design with a structured approach to gather data on Biofarma Charolais's corporate social responsibility (CSR) activities. The data collection method utilized was guided interviews with open-ended questions. The researchers conducted face-to-face interviews with the CEO of the company, allowing for in-depth exploration of the company's CSR practices. Guided interviews were chosen as they offer flexibility in responses and enable participants to provide detailed information about their experiences and perspectives. The use of open-ended questions allowed the CEO to express their insights freely and in their own words, providing rich and nuanced data on CSR activities. The interview questions were specifically tailored to investigate CSR activities across the triple bottom-line dimensions, namely social, environmental, and economic aspects. The CEO was asked to evaluate the company's commitment to each CSR activity on a Likert scale, ranging from 1 (Not at all) to 5 (Very strong/Complete commitment). The interview process was conducted in a comfortable and confidential setting, ensuring that the CEO felt at ease in discussing the company's CSR practices openly. The researchers actively listened and probed for additional information when necessary to obtain comprehensive responses. The data collected from the guided interviews were transcribed, coded, and analyzed to identify themes and patterns in the company's CSR activities. The Likert scale ratings provided by the CEO were also analyzed quantitatively to measure the level of commitment to each CSR activity.

It is essential to acknowledge the limitations of this study. Firstly, the study focused solely on Biofarma Charolais, limiting the generalizability of the findings to other companies in the same industry or region. Secondly, the results relied on the CEO's perception of the company's CSR practices, which might be influenced by their personal biases or perspectives. Additionally, the qualitative nature of the study limits the ability to quantify the impact and effectiveness of CSR activities objectively. To address the limitations and build on this study, future research could expand the sample size to include other stakeholders, such as employees and customers, to gain a more comprehensive understanding of the company's CSR practices. Additionally, conducting a longitudinal study would enable the examination of changes and developments in CSR activities over time. Employing a mixed-methods approach, combining qualitative insights with quantitative data, would provide a more holistic evaluation of the company's CSR efforts. Finally, comparative studies across different companies and industries could offer valuable insights into best practices and the potential for improvement in CSR activities. Findings may apply to other small agricultural companies with similar CSR practices and aspirations.

3. Results

Biofarma Charolais is a small Slovak company that produces agricultural products. It was founded in 1992 and is headquartered in the Trnava region. The company has a turnover of up to 10 million euros and employs about 50 people. The owner of the company is a Slovak. The company has three members on the board of directors, of which two are women. The predominant gender in the company is women. The company has never had an ethical scandal and does not have formalized ethics.



Picture 1 Charolais cattle
Source: <http://www.penzion-adam.sk/>

The company deals with the production and sale of meat, milk, and dairy products. During the last decades, they added food processing to their primarily agricultural production. Nowadays they are producers of jams and marmalades processing not just their fruit but cooperating with other local producers too (including small farmers buying their excessed). Also, they are processing their fruit into a range of dried fruit products such as „chocolate dried apples“. Recently, they added a brewery (Eliáš Brewery) to their portfolio. In this, they are producing beer in bio quality labeling in their own brand based on the story of their ancestor. It sells its production on the Slovak market and to a lesser extent abroad. The company strives to produce quality products responsibly. In agriculture, it uses modern technologies and procedures that help to protect the environment.

Eliáš (Micro) Brewery

In the pursuit of empirical insights regarding brewing practices, Eliáš Brewery stands as a quintessential subject reflecting historical and transcontinental influences on beer crafting. Situated in the village of Podkylava within the Myjava district, this brewery encapsulates a compelling narrative intertwined with historical relevance and contemporary innovation.



Pucture 2 Microbrewery - outside
Source: <https://zivepivo.sk/pivovary/elias/>

The esteemed history of Eliáš Brewery roots itself in the familial migration to France in the early 1920s, where diligent labor on an estate under Lea Kleia fostered a deep appreciation for the esteemed beverage, beer. Noteworthy is the convergence of three Eliáš brothers—Ludovít, Dominik—and sisters Otilia, Justína, and Júlia within this historical context, contributing to a significant diaspora of Slovak laborers in France. The profound influence of Belgian brewing practices emerged as a pivotal element in Eliáš Brewery's trajectory. The proprietor, deeply enamoured with the art of brewing, forged partnerships, and established a beer bar with the aid of three Slovak companions. This endeavour led to the acquisition of brewing technology and the subsequent hiring of an experienced brewer from Belgium. Under the guidance of this master brewer, the trio of Slovaks received tutelage, pioneering the brewery's foray into crafting top-fermented wheat beers initially, followed by the inclusion of lagers.



Picture 3 Eliáš brand

Source: <https://zivepivo.sk/pivovary/elias/>

The brewery's exponential growth manifested as the local restaurant expanded to accommodate the increasing demand for its distinctive brews. An intriguing facet was the community's involvement, granted access to the brewery's storage facility, fostering a self-service culture among the villagers. Vojtech Tlčík, the current proprietor, reveres the brewery's historical legacy. Inspired by familial heritage, Tlčík ventured into establishing the Adam guesthouse in 2006, emphasizing regional agricultural production, ecological practices, cattle breeding, and fruit cultivation within the Myjava district. As the brewery ventures forward, its offerings encompass a selection of traditional French and Belgian beers alongside lagers. These unique brews are distributed in distinct packaging formats—ranging from glass bottles of varying capacities to barrels—in exclusive outlets and accommodations.



Picture 4 Microbrewery - insight

Source: <https://zivepivo.sk/pivovary/elias/>

The future trajectory of Eliáš Brewery harbours innovative prospects, driven by the ingenuity of a skilled brewer, a student at the Slovak University of Agriculture in Nitra. Ideas span from potential beer-based therapies, including beer baths, to the creation of brews exclusively from indigenous Slovak ingredients tailored for the athletic and cycling communities.



Picture 5 Eliáš beer product portfolio
Source: <https://zivepivo.sk/pivovary/elias/>

Biofarma Charolais is a significant employer in the region. The company contributes to the development of the local economy and supports regional products. The company is also a good neighbor and supports local activities and projects. The subject is an example of good practice in agriculture. The company strives to produce quality products responsibly and contributes to the development of the region. The monitored subject has no separate CSR department or other department devoted to such activities. CSR is planned and managed directly by the CEO of the company. Respecting the triple bottom line approach, the CEO of the company evaluated the level of engagement in selected CSR activities:

Social CSR Activities: The company demonstrated a very strong commitment (score: 5 - Very strong) across various social CSR activities. This included promoting workplace equality based on gender, age, ethnicity, sexual orientation, and more. The company actively supported employees' volunteering adopted ethical principles through an ethical code and engaged in philanthropy and sponsorship. Moreover, the company showed high dedication to supporting the local community through collaborations with schools, NGOs, and local government. Employee care was prioritized, going beyond legal requirements to ensure well-being, safety, and workforce regeneration. The company provided education and training beyond necessity and advocated for work-life balance through the elimination of overtime and flexible working hours. Additionally, it publicly rejected child labor both internally and among suppliers. While the commitment towards Ukrainian crisis assistance was moderate (score: 3 - Averagely), the overall dedication to social activities was commendable.

Environmental CSR Activities: The company exhibited a very strong commitment (score: 5 - Very strong) to numerous environmental CSR activities. This involved implementing certified organic/bio products and complying with EMAS or ISO 14000 standards for ecological production practices. It also invested significantly in green technologies to reduce its environmental footprint. Additionally, eco-friendly transportation alternatives, such as shifting transportation from roads to railways, were actively promoted. Waste reduction and eco-friendly waste management were prioritized to minimize environmental impact. The company's dedication to using recycled materials and reducing CO₂ emissions aligned with its commitment to sustainable practices. Conservation of energy and water resources was given utmost importance, and significant steps were taken to protect natural resources such

as water and soil. The company strongly believes in using renewable natural resources, reflecting a responsible approach towards environmental sustainability.



Picture 6 Ecofarm label

Source: <http://www.penzion-adam.sk>

Economic CSR Activities: The company exhibited a strong commitment (score: 4 - Strongly) to various economic CSR activities. This included rejecting corruption, protecting intellectual property, and providing exemplary pre-and post-sales services. Transparency was key to the company's operations, ensuring open reporting of activities and results. The company actively contributed to society by creating job opportunities for individuals with special needs and maintaining highly loyal relationships within its supply chain. Delivering goods and services of superior quality and safety to customers was emphasized. The company's commitment to transparently report its CSR activities demonstrated dedication to accountability and responsible business practices. Eliminating "greenwashing" practices was a priority, reflecting the company's ethos of operating with integrity and positively contributing to the economic well-being of various stakeholders.

Based on the conducted interview, the company's readiness for reporting on certain non-financial aspects raised concerns. The company's preparation for complying with the Directive on Non-Financial Reporting was considered weak, indicating possible inadequacy in meeting the reporting requirements of the European Commission. Furthermore, the CEO expressed a lack of preparedness to report on both the EU Taxonomy of Environmental Objectives and the Regulation on Corporate Sustainability Reporting, pointing to potential gaps in preparedness and compliance regarding sustainability, environmental objectives, and corporate sustainability reporting. Addressing these weaknesses will be pivotal for the company to meet reporting obligations and demonstrate a strong commitment to responsible business practices.

Discussion

The findings of this case study suggest that CSR can be a valuable tool for businesses that are looking to improve their performance. However, it is important to note that CSR is not a panacea. There are several challenges associated with implementing CSR, and it is important to carefully consider the specific needs of the business and its stakeholders before embarking on a CSR initiative. Every entrepreneur needs to achieve efficiency in business. Today's trends show that to achieve this goal it is very appropriate to have a well-built, functional, and variable business model. However, in practice, we encounter many shortcomings that occur in this area. Tell, J. et al (2016) state due to its relatively recent emergence, there is a dearth of research on business model innovation in specific industry sectors, and one notable example is the agri-food sector. Leat, P. et al (2010) deliver the results indicating that trust

is more evident within small- and medium-sized enterprises where representatives share personal relationships. Trust is more prevalent upstream in the chain compared to downstream. Nevertheless, substantial distrust exists at the farmer's end in several of the examined chains.

4. Conclusion

The case study of Biofarma Charolais provides an insightful glimpse into a small agricultural company that has extended its operations from traditional agricultural activities to diversified food processing, encompassing the recent addition of Eliáš Brewery to its portfolio. Through qualitative research methods and guided interviews with the CEO, this study explored the company's corporate social responsibility (CSR) practices across social, environmental, and economic dimensions. Biofarma Charolais, rooted in the Trnava region of Slovakia, has showcased a notable commitment to CSR and ethical processing. Notably, the company's diverse CSR activities extend beyond legal mandates, showcasing a strong inclination towards social welfare, environmental sustainability, and economic responsibility. The company's CSR initiatives encompass workplace equality, community engagement, philanthropy, and employee well-being. Additionally, the company demonstrated a strong commitment to environmental sustainability, employing organic practices, green technologies, and responsible resource management.

From an economic perspective, Biofarma Charolais emphasized transparency, rejected corrupt practices, and prioritized job creation and superior service delivery. However, concerns were raised regarding the company's readiness for compliance with reporting requirements on non-financial aspects, including EU directives and regulations. This signifies a crucial area for improvement to enhance accountability and transparency in line with the evolving CSR reporting landscape. While this case study focused solely on Biofarma Charolais, its findings shed light on best practices and potential areas for improvement in CSR across similar small agricultural companies. The study's limitations, including its qualitative nature and reliance on CEO perceptions, underscore the need for broader stakeholder inclusion and longitudinal studies to gain a more comprehensive understanding of CSR practices' impacts over time.

Future research endeavors could expand the sample size to encompass various stakeholders, enabling a more holistic evaluation of CSR practices. Additionally, longitudinal studies could track the evolution of CSR initiatives, and a mixed-methods approach might provide a more nuanced analysis. Comparative studies across industries and regions would also offer valuable insights into diverse CSR practices, further enriching the understanding of responsible business conduct. In essence, Biofarma Charolais serves as a commendable example of a company striving to balance economic success with social and environmental responsibilities. Addressing reporting deficiencies will be pivotal for the company's continued commitment to responsible business practices, contributing to its sustainability journey and serving as a beacon of CSR excellence in the agricultural sector.

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Author Declaration: We authors of the above-titled paper hereby declare that the work included is original and is an outcome of the research carried out by the authors indicated in it. Further, we authors declare that the work submitted has not been published already or under consideration for publication in any Journals/Conferences/Symposia/Seminars. We also declare that the work does not infringe on any copyrights, property rights of others including licenses and it is free from plagiarism.

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Financial Performance of Craft Brewery Banskobystrický pivovar, a.s. during COVID-19 Pandemic in Slovakia

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Abstract

Craft beer refers to a beer that is usually produced by small, independent breweries using traditional brewing methods and high-quality ingredients. In Slovakia, the number of craft breweries producing this type of beer, is currently approaching 100. COVID-19 significantly impacted the operations and production of microbreweries also in Slovakia. The purpose of this study is to evaluate the financial performance of craft brewery Banskobystrický pivovar, a.s. during COVID-19 pandemic in Slovakia. Financial performance is measured by achieved Revenue and Net Income during the calendar years 2018-2022. Trending analysis is used to identify year over years changes of selected performance indicators during monitored period. Source of the data for the research are financial statements of analyzed craft brewery. Results reveal lower performance measured by Revenue during the pandemic years comparing to the rest of the period.

Keywords: beer production, COVID-19, craft breweries, financial performance

JEL Classification: L10, L66, M10, M20

1. Introduction

The terms "craft brewery," "artisanal brewery", "microbrewery", "independent brewery", "specialty brewery", and "local brewery" are occasionally employed to characterize breweries that have recently commenced brewing on a small scale, producing distinct beer types. This sets them apart from larger breweries that have often been in operation for more than a century and have endured the consolidation process of the twentieth century. The term "craft beer" emphasizes the beer type and brewing process, or "microbrewery" emphasizing the scale of the brewery. Due to the differences between countries and their unique historical traditions in beer brewing, there is not universally accepted definition for the terms "craft brewery" or "microbrewery" (Garavaglia and Swinnen, 2018).

Craft beer is a type of beer that is produced by small, independent, and traditional breweries. The Brewers Association of the US defines a craft brewery as the one that produces less than 6 million barrels per year, is independent (with no more than 25% of the company owned by an industrial brewery) and uses traditional or innovative ingredients and fermentation techniques to create unique flavors. Craft beer is often unfiltered and not pasteurized, and it is typically focused on local markets. Craft beer is a complex combination of different types and varieties of conventional beer ingredients (malted barley, hops, and yeast) with new ones (fruits, spices, herbs, etc.), in different proportions and combinations, using traditional and new brewing techniques, resulting in a wide range of styles (Villacreces *et al.*, 2022).

According to Salanta *et al.* (2023) craft beer refers to beer that is produced by small, independent breweries using traditional brewing methods and high-quality ingredients. While there is no universally accepted definition of craft beer, the Brewers Association defines a craft brewer as a small and independent brewer that produces no more than 6

million barrels of beer per year. Craft beer is known for its diverse and unique flavors, which are often the result of innovative brewing techniques and the use of unusual ingredients.

1.1. Advantages and disadvantages of craft breweries

Craft beer presents a vibrant and dynamic landscape within the brewing industry, boasting several advantages. Craft breweries excel in diversifying flavors and styles by experimenting with various ingredients and brewing techniques, resulting in a rich tapestry of unique and distinct beer experiences. Beyond the brewing kettle, these establishments play a pivotal role in stimulating local economies. Craft breweries contribute significantly by providing employment opportunities, sourcing local ingredients, and becoming magnets for tourism, thereby fostering economic growth within their communities. Moreover, craft breweries establish strong bonds with their locales, actively participating in community events and championing local causes. This engagement creates a sense of belonging and community spirit, distinguishing craft beer culture. Furthermore, the craft beer movement is synonymous with innovation and creativity, as craft brewers lead the charge in experimenting with novel ingredients and brewing methodologies, consistently pushing the boundaries of traditional brewing practices (Garavaglia and Swinnen, 2018).

However, craft beer does face certain challenges. The higher price point of craft beers, attributed to the use of premium and sometimes rare ingredients, coupled with smaller production scales, may be a deterrent for cost-conscious consumers. Additionally, the limited availability of craft beers, especially in regions lacking a strong craft brewery presence, may restrict consumer access, limiting the broader adoption of craft brews. Critics also raise concerns about the consistency of craft beer quality, arguing that the variability in production methods could lead to inconsistencies in flavor, in contrast to the standardized taste of mass-produced beers. Moreover, in certain markets, the saturation of the craft beer sector could intensify competition among breweries, posing challenges for new entrants seeking to establish themselves in an increasingly crowded marketplace. Despite these challenges, the craft beer movement continues to thrive, celebrated for its commitment to flavor diversity, community engagement, and a relentless pursuit of brewing innovation (Garavaglia and Swinnen, 2018).

1.2 Craft breweries in Slovakia

According to Wojtyra *et al.* (2020), the global surge in the craft beer movement has been particularly pronounced in various European countries, reflecting a growing interest in diverse beer styles, a commitment to supporting local businesses, and a collective desire for unique flavor experiences. Central Europe, including Slovakia, has witnessed a notable transformation in its beer landscape. Here, the craft beer revolution owes much to the diffusion of innovation, with home brewers playing a pivotal role in commercializing their passion and establishing new breweries. The advent of this movement in Central Europe can be attributed to factors such as the ready availability of technology and expertise, convenient access to brewing inputs, governmental backing for craft brewery startups, and collaborative efforts among brewers. Despite the rich historical brewing traditions in Slovakia, this country has experienced shifts in its beer markets in the twenty-first century, marked by the growing influence of the craft beer revolution.

In Slovakia today, we have 93 small breweries open and another 4 medium and large ones. Several other breweries are in the process of being prepared. At the same time, it seems that several new cities will be added to the offer in the coming years. At the same time, Slovakia is experiencing a small beer revolution. While in 2009 you could count the number of small breweries on the fingers of two hands, today their number is approaching 100 (O pive, 2023).

1.3 Influence of COVID-19 on craft breweries

According to Clarke *et al.* (2022), the challenges faced by craft breweries during the pandemic likely include disruptions to production, distribution, and sales, as well as the impact of lockdowns and restrictions on taprooms, bars, and restaurants where craft beer is typically served. Craft breweries may have faced difficulties in maintaining their operations, managing supply chains, and adapting to changes in consumer behavior and preferences. Additionally, the economic impact of the pandemic, including reduced consumer spending and shifts in demand for alcoholic beverages, likely posed significant challenges for craft breweries.

During the unprecedented challenges of the pandemic, social media emerged as a crucial tool for brewers to maintain connectivity with their consumers, evolving into not just a communication channel but a virtual storefront. This shift became instrumental in adapting to the altered consumer landscape, as individuals reevaluated their spending habits and values. In this dynamic environment, traditional business models faced challenges, but opportunities arose for those possessing flexibility and diverse portfolios. The restrictions imposed by the pandemic prompted brewers to explore innovative avenues for product distribution, fostering collaboration and camaraderie among small independent businesses. By leveraging social media, brewers successfully reached local audiences, attracting new customers to their breweries, and deepening relationships with existing patrons. This transformative period underscored the resilience of the brewing industry, demonstrating its ability to pivot, connect, and thrive amidst adversity (Clarke *et al.*, 2021).

The arrival of a vaccine in December 2020 marked a turning point, leading to the gradual easing of social gathering restrictions. For craft breweries, this meant a welcome return of patrons to their taprooms, albeit under new norms requiring mask-wearing and adherence to preventive measures like appropriately spaced tables. However, the shift from a taproom-centric model to a 'to-go and delivery' approach became a necessary pivot for craft breweries during the pandemic, allowing them to survive, yet for many, prosperity remained an elusive outcome (Reid *et al.*, 2022).

1.4 Future trends in craft breweries

The craft beer industry is constantly evolving, and there are several trends that we can expect to see in the coming years. One trend is the continued growth of the industry, with more and more breweries opening up and producing unique and innovative beers. Another trend is the increasing popularity of sour beers, which are made using wild yeast and bacteria and have a tart, acidic flavor. Additionally, there is a growing interest in low-alcohol and non-alcoholic craft beers, as well as beers made with alternative grains such as quinoa, millet, and sorghum. Finally, there is a trend towards sustainability and environmental responsibility, with many craft breweries focusing on reducing their carbon footprint and using locally sourced ingredients (Villacreces *et al.*, 2022).

1.5 Use of Genetically Modified Organisms in craft breweries

The use of genetically modified organisms (GMOs) in beer brewing has sparked controversy within the industry, yet genetic engineering techniques continue to advance at the laboratory level. Notably, GMOs have been harnessed to develop yeast strains capable of efficiently degrading complex carbohydrates in beer, leading to reduced carbohydrate content. This intersection of craft beers and GMOs is rooted in genetic engineering methods applied to beer brewing. Molecular genetics plays a crucial role in this process by extracting and introducing genes responsible for desired characteristics into yeast strains. Additionally, hybridization techniques involve breeding hybrids that confer novel traits to the yeast strains utilized in brewing. These genomic approaches have become integral to the phenotypic modification of yeast strains in craft breweries, offering brewers diverse avenues for

innovation. Recent years have witnessed the emergence of different techniques, including CRISPR/CAS-9, in which genetic engineering is employed to enhance the activity of specific enzymes in yeast. This enhancement results in beers with elevated levels of aromatic compounds or intensified hop flavor. In essence, the utilization of DNA techniques in craft brewing has not only sparked controversy but has also opened up unprecedented possibilities for innovation and customization within the industry (Astola *et al.*, 2023).

The main objective of this study is to evaluate the financial performance of the craft brewery Banskobystrický pivovar, a.s. during COVID-19 pandemic in Slovakia. Financial performance of the selected craft brewery is measured by achieved *Revenue* and *Net Income* during the calendar years 2018-2022. The paper is structured as follows: Section 2 discusses the data and methodology; and sections 3 and 4 present results and examine discussion and conclusion.

2. Data and Methods

This research paper is based on the data that were obtained from financial statements of craft brewery Banskobystrický pivovar, a.s. publicly available on webpage *Register účtovných závierok* (www.registeruz.sk). This webpage containing financial statements of companies based and doing business in Slovakia is established by Act no. 431/2002 Coll. on accounting as amended and it is a public administration information system operated by the budget organization DataCentrum, Cintorínska 5, 814 88 Bratislava (Register účtovných závierok, 2023). For the purpose of this research were downloaded financial statements of analyzed craft brewery for calendar years 2018-2022.

For the evaluation of the financial performance of analyzed craft brewery were selected *Revenue* and *Net Income* performance metrics. Information about *Revenue* and *Net Income* for the monitored period, were retrieved directly from the financial statements of analyzed craft brewery. For the purpose of this study, *Revenue* represents the sales of produced goods and services for particular year and is reported in *Income Statement* line no. 1. *Net Income*, reported in final line no. 61 of *Income Statement* for the particular year, represents the economic result for the accounting period after taxation. After identification and consolidation of *Revenue* and *Net Income* performance metrics from financial statements, *Trending Analysis* was performed to identify *year-over-year (Y/Y)* changes of selected performance metrics during monitored period.

3. Results and Discussion

The evaluation of financial performance of craft brewery Banskobystrický pivovar, a.s. during COVID-19 pandemic in Slovakia was performed based on the data retrieved from financial statements of analyzed craft brewery for period 2018-2022. The financial performance of the craft brewery in scope was measured by *Revenue* and *Net Income* metrics, which were retrieved directly from obtained income statements. Consequently, *Trending Analysis* was performed to compare the financial performance of the analyzed craft brewery during the pre-covid period (years 2018-2019) with the covid period (years 2020-2021) and post-covid period (year 2022) in Slovakia.

Craft brewery Banskobystrický pivovar, a.s. achieved the highest revenue (9.3 mil. EUR) in the last year (2022) within the monitored period. On the contrary, the lowest performance from the revenue perspective was in year 2021 (7.4 mil EUR). The trending of net income during selected period did not fully copy the trending of revenue, as the highest value of net income (0.4 mil EUR) was achieved in year 2020 and the lowest (0.1 mil EUR) in the following year 2021. Trending of the revenue and net income for the whole monitored period can be found in Table 1 below.

Table 1: Financial performance of analyzed craft brewery during monitored period 2018-2022

	Performance trending (EUR)				
	2018	2019	2020	2021	2022
Revenue	8 452 712	8 609 347	8 217 014	7 417 210	9 265 174
Net Income	307 748	235 610	427 889	100 824	133 350

Source: Own research based on financial statements of analyzed craft brewery

The most significant performance improvement from the revenue perspective was in year 2022, when this metric increased by 25 % year-over-year, which equals to 1.8 mil. EUR. The lowest drop was reported in year 2021, when the revenue decreased by 10 % (almost by 0.8 mil. EUR) comparing to previous year. Net income most significantly (by 82% or by 0.2 mil EUR) increased in year 2020, while the following year 2021 the performance from net income perspective reached the most dramatic downfall, when the value of this performance indicator decreased by 76% (by 0.3 mil. EUR). Complete details for the year-over-year performance changes are outlined in tables 2 and 3 below.

Table 2: Year-over-year EUR changes of selected performance metrics during monitored period 2018-2022

	Y/Y Change (EUR)				
	2018	2019	2020	2021	2022
Revenue	-	156 635	- 392 333	- 799 804	1 847 964
Net Income	-	- 72 138	192 279	- 327 065	32 526

Source: Own research based on financial statements of analyzed craft brewery

Table 3: Year-over-year % changes of selected performance metrics during monitored period 2018-2022

	Y/Y Change (%)				
	2018	2019	2020	2021	2022
Revenue	-	2%	-5%	-10%	25%
Net Income	-	-23%	82%	-76%	32%

Source: Own research based on financial statements of analyzed craft brewery

3.1 Discussion

As one of the main reasons for the performance decrease of craft brewery Banskobystrický pivovar, a.s. measured by achieved revenue in years 2020 and 2021 can be considered dramatic pandemic situation in Slovakia. During these years Slovak government implemented various anti-pandemic measures (in form of lockdowns) to limit the social contacts and consequently to stop the spreading of virus COVID-19. Implemented lockdowns and government anti-pandemic measures negatively impacted Slovak economy and majority of businesses, especially operating in gastronomic segment, travel, tourism, sport, and many others. As the majority of craft beer consumption is in bars, cafes and restaurants, which were, during lockdowns, either closed or opened only with very limited capacity, the consumption of craft beer decreased, comparing to pre-pandemic period (without any limitations), which lead to sales decrease of craft beer and consequently to the decrease of performance measured by achieved revenue. This negative trend is also reflecting the reported revenue of craft brewery Banskobystrický pivovar, a.s. during years 2020 and 2021. The increase of the revenue of analyzed craft brewery in the following year 2022 is driven mainly by the fact, that the pandemic situation in Slovakia improved and the

anti-pandemic restrictions and lockdowns negatively affecting bars, cafes and restaurants were gradually cancelled, which lead to increased consumption and sales of craft beer.

The net income of craft brewery Banskobystrický pivovar, a.s. in pandemic year 2020 did not decrease as revenue metric (-5%), but significantly increased by 82%. This was driven mainly by the income from financial activity performed by craft brewery this year i.e. by the revenue from the sale of securities and shares in amount of 486 638 EUR. In the previous year 2019, the company did not have this type of income and in the following year 2021 neither. This fact was also reflected by reported year-over-year net income change (decrease by 75% in year 2021).

4. Conclusion

Results of this study indicate lower performance, measured by achieved revenue, of analyzed craft brewery Banskobystrický pivovar, a.s. during the COVID-19 pandemic period (years 2020-2021) comparing to pre-pandemic period (years 2018 and 2019) or post-pandemic period (year 2020) in Slovakia. The performance of the analyzed craft brewery, measured by net income, was lower in pandemic year 2021 comparing to pre-pandemic years (2018-2019) or post-pandemic year (2022). But in the pandemic year 2020, the performance measured by net income metric, was higher than in pre-pandemic years (2018-2019) or post-pandemic year (2022), which was driven by the revenue from the sale of securities and shares.

Limitation of this research is that it was focused only on one craft brewery based in Slovakia, so the findings may not reflect the situation in other craft brewers in Slovakia. Another limitation is that the performance of analyzed craft brewery during the monitored period was very likely determined also by other factors not mentioned in this paper.

The potential expansion of this study and the recommendation for the future research is to include into the scope higher number of craft breweries based in Slovakia, so the findings will be more representative for this segment and consider alternative performance metrics than those used in this paper.

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Author Declaration: We authors of the above titled paper hereby declare that the work included is original and is an outcome of the research carried out by the authors indicated in it. Further, We authors declare that the work submitted has not been published already or under consideration for publication in any Journals/Conferences/Symposia/Seminars. We also declare that the work does not infringe on any copyrights, property rights of others including licenses and it is free from plagiarism.

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