



Insight into coffee consumption behavior: a Bibliometrix analysis

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Abstract. Coffee, the ubiquitous elixir of our modern world, captivates us with its potent aroma and promises of alertness. But beyond the familiar steam, lies a complex dance of motivations, preferences, and cultural nuances that fuel our consumption. This research uses bibliometrics, a powerful quantitative tool, to delve into the rich tapestry of coffee behavior, uncovering the hidden patterns and factors that shape our choices. Our journey begins with a data-driven exploration of coffee's historical arc, tracing its path from humble Ethiopian bean to a global trade commodity. We unveil how coffee houses transformed from intellectual hubs to social sanctuaries, intertwining its consumption with identity, belonging, and even national pride. Moving beyond the surface, we dissect the psychological forces driving our coffee habits, revealing the interplay between personality traits, stress levels, and sleep patterns. Socioeconomic factors are also examined, demonstrating how income, education, and occupation influence not only the quantity consumed but also brewing methods, brand choices, and social settings. Technology's ever-present influence is revealed as it democratizes access, broadens choices, and even gamifies the coffee experience through single-serve machines, coffee shop chains, and mobile apps. The digital space, with its online communities and influencer trends, sheds light on how social media shapes our coffee preferences and consumption habits. We navigate the ongoing debate surrounding coffee's health effects, examining the interplay between demonization and celebration, revealing how consumer choices evolve with scientific dialogue. Finally, we peer into the future, gazing at emerging trends and innovations in coffee consumption. Sustainable practices, ethical sourcing, and personalized brewing experiences are just a glimpse into the future of our relationship with this beloved beverage. By analyzing the research landscape, we aim to identify the forces driving these innovations and predict their potential impact. This research is not merely a statistical analysis; it's a quest to understand ourselves, our societies, and the intricate web of factors that bind us to this seemingly simple cup. By harnessing the power of bibliometrics, we hope to unveil not just the data-driven insights but also the cultural essence, the psychological nuances, and the human stories that lie at the heart of coffee consumption. So, brew a cup of curiosity, settle in, and join us on this journey into the data-rich world of coffee behavior. Together, we may just discover that the aroma of a perfect cup holds a universe of understanding.

Keywords: coffee, consumption behavior, bibliometric analysis.

1 Introduction

Coffee, the invigorating elixir and ubiquitous companion, captivates us with its potent aroma and promises of alertness. Yet, beyond the familiar steam swirling from a mug, lies a complex dance of motivations, preferences, and cultural nuances that fuel our consumption. This research delves into the rich tapestry of coffee behavior, utilizing the powerful tool of bibliometrics to unveil the hidden patterns and factors that shape our choices.

Our journey begins with a data-driven exploration of coffee's historical arc. Tracing its path from a humble Ethiopian bean to a global trade commodity, we'll chart its evolution through eras of cultural exchange, economic booms, and technological advancements. We'll witness the transformation of coffee houses from intellectual hubs to social sanctuaries, uncovering how its consumption became intertwined with identity, belonging, and even national pride.

Moving beyond the surface, we'll dissect the psychological forces driving coffee consumption. Through the lens of research, we'll reveal the interplay between personality traits, stress levels, and sleep patterns, uncovering the unique psychological cocktail that compels each individual to reach for a cup. From the quest for alertness and the ritualistic comfort to the social lubricant effect, we'll shed light on the diverse motivations that fuel our engagement with this beloved beverage.

Socioeconomic factors will also dance on the stage of our investigation. Income, education, and occupation will be examined as key players influencing not only the quantity of coffee consumed but also the preferences for brewing methods, brand choices, and consumption settings. Regional variations will be brought to light, revealing how cultural norms and culinary traditions infuse coffee with local flavors and meanings, transforming it from a beverage into a cultural expression.

Technology, the ever-present force shaping our lives, will also be explored as a significant influencer of coffee behavior. We'll investigate how advancements have democratized access, broadened choices, and even gamified the coffee experience through single-serve machines, coffee shop chains, and mobile apps. The digital space, with its online communities and influencer trends, will shed light on how social media shapes our coffee preferences and consumption habits.

The ongoing debate surrounding the health effects of coffee will also be addressed. Navigating through the research landscape, we'll examine the interplay between demonization of caffeine and celebration of its potential health benefits, revealing how consumer choices are shaped by this evolving scientific dialogue.

Finally, we'll peer into the future, casting a data-driven gaze at the emerging trends and frontiers in coffee consumption. Sustainable practices, ethical sourcing, and personalized brewing experiences are just a glimpse into the innovations that may reshape our relationship with this beloved beverage. By analyzing the research landscape, we'll aim to identify the forces driving these innovations and predict their potential impact on the future of coffee consumption.

This research is not merely a statistical analysis; it's a quest to understand ourselves, our societies, and the intricate web of factors that bind us to this seemingly simple cup. By harnessing the power of bibliometrics, we hope to uncover not just the data-driven

insights but also the cultural essence, the psychological nuances, and the human stories that lie at the heart of coffee consumption. So, brew a cup of curiosity, settle in, and join us on this journey into the data-rich world of coffee behavior. Together, we may just discover that the aroma of a perfect cup holds a universe of understanding.

2 Methods and data

This research uses bibliometric analysis on data which is retrieved from the Web of Science. Bibliometrics is the application of quantitative methods and statistical analysis to study academic publications. It delves into data like citations, keywords, authorship patterns, and publication dates to uncover hidden trends, relationships, and insights within the research landscape. Utilizing bibliometrics offers a compelling arsenal for your coffee consumption research. Its objectivity and quantitative nature provide data-driven insights, untainted by personal biases. By analyzing vast datasets of publications, it paints a broader picture than individual studies, revealing trends and relationships that might otherwise remain hidden. This efficient method saves valuable time and resources, while also unlocking the secrets slumbering within the research landscape. In essence, bibliometrics empowers you to delve deeper into the world of coffee consumption, uncovering the intricate web of factors that bind us to this aromatic, stimulating beverage.

The bibliometrix R package will be used to perform bibliometric analysis. The bibliometrix R package, a potent open-source R package, equips researchers with a plethora of tools for delving into the world of bibliometrics. Its user-friendly interface seamlessly imports data from diverse sources, generates robust statistics, crafts interactive visualizations of networks and keywords, and unlocks insightful avenues for exploring co-citations, collaborations, and authorship patterns. From unveiling hidden trends to pinpointing intellectual communities, Bibliometrix empowers researchers to navigate the rich landscape of bibliographic data, making it a cornerstone for any quantitative investigation into the field of coffee consumption.

The literature data for this paper were obtained from peer-reviewed articles published from 2019 to 2023 in the core collection of the WOS database[1]. To ensure the quality of the literature used for analysis, conference papers, catalogs, interviews and newsletters were excluded from the literature data. A total of 1010 valid literature data were obtained for this study for further analysis. The search-related restrictions were as follows:

Keywords: coffee consumption behavior

Type: Article

Time span: 2019-2023

Database: SCI-EXPANDED, SSCI

3 Results

The main information of analysed corpus data is represented by Table 1. The data involves 1010 documents from 570 journals, 4460 authors, 3441 keywords plus, and 3865 author’s keywords.

Table 1. The main information of analysed corpus data

Description	Results
MAIN INFORMATION ABOUT DATA	
Timespan	2019:2023
Sources (Journals, Books, etc)	570
Documents	1010
Annual Growth Rate %	5.93
Document Average Age	2.89
Average citations per doc	9.3
DOCUMENT CONTENTS	
Keywords Plus (ID)	3441
Author's Keywords (DE)	3865
AUTHORS	
Authors	4460
Authors of single-authored docs	19
AUTHORS COLLABORATION	
Single-authored docs	20
Co-Authors per Doc	4.98
International co-authorships %	29.9

The 10 most relevant journals are listed in Table 2. The Sustainability ranks the first with 37 publications, the only journals exceed 30 publications. Following are Nutrients and British Food Journal.

Table 2. The 10 most relevant journals

Sources	Articles
SUSTAINABILITY	37
NUTRIENTS	23
BRITISH FOOD JOURNAL	18
INTERNATIONAL JOURNAL OF ENVIRONMENTAL RESEARCH AND PUBLIC HEALTH	15
POLYMERS	13
FOODS	11
FUEL	11
LANGMUIR	11
PLOS ONE	11
JOURNAL OF CLEANER PRODUCTION	9

The 10 most relevant affiliations are listed in Table 3. The first, Federal University of Lavras is from Spain, the second, University of Sao Paulo is from Brazil, and the third, Kangwon National University is from Korea. This is different from other scientific areas, the institutions from China and USA are dominant in these statistics.

Table 3. The 10 most relevant affiliations

Affiliation	Articles
UNIV FED LAVRAS	64
UNIV SAO PAULO	29
KANGWON NATL UNIV	28
UNIV MICHIGAN	28
UNIV FED VICOSA	26
KING SAUD UNIV	25
UNIV FED ESPIRITO SANTO	22
UNIV KEBANGSAAN MALAYSIA	17
UNIV TORONTO	16
CHINA MED UNIV	15

The 10 most productive countries are listed in Table 4. China, USA, and Brazil rank the first to third. It noticed that Brazil and Colombia are major coffee product countries, and other countries are major coffee consumption countries.

Table 4. The 10 most productive countries

region	Freq
CHINA	532
USA	501
BRAZIL	452
SOUTH KOREA	240
ITALY	191
GERMANY	179
SPAIN	160
INDIA	146
UK	145
COLOMBIA	109

The 20 most cited articles are listed in Table 5. 20 articles has been cited over 50 times since publishing.

Table 5. the 20 most cited articles

Paper	DOI	Total Citations
VAN-TRUC NGUYEN VTN, 2019, BIORESOUR TECHNOL	10.1016/j.biortech.2019.03.096	139
OROOJI Y, 2020, J ALLOY COMPD	10.1016/j.jallcom.2020.155240	129
HUSAIN W, 2020, ENVIRON HEALTH PREV	10.1186/s12199-020-00901-5	114
ZHANG J, 2019, ENERGY CONV MANAG	10.1016/j.enconman.2019.05.019	99
SETTER C, 2020, FUEL	10.1016/j.fuel.2019.116420	86
BI H, 2021, SCI TOTAL ENVIRON	10.1016/j.scitotenv.2020.142293	84
AFOLABI OOD, 2020, RENEW ENERGY	10.1016/j.renene.2019.09.098	82
CORDOBA N, 2019, SCI REP	10.1038/s41598-019-44886-w	76
FILIMONAU V, 2019, INT J HOSP MANAG	10.1016/j.ijhm.2018.04.010	75
BI H, 2020, ENERGY	10.1016/j.energy.2020.118790	72
SHIN J, 2021, ENVIRON POLLUT	10.1016/j.envpol.2020.116244	71
KHAN A, 2019, ENVIRON RES	10.1016/j.envres.2018.09.019	66
ARRIGO R, 2020, POLYMERS	10.3390/polym12040892	64
SAMOGGIA A, 2019, NUTRIENTS	10.3390/nu11030653	61
BARROSO DE MORAIS TC, 2019, FOOD CHEM	10.1016/j.foodchem.2018.04.136	61
GIORCELLI M, 2019, POLYMERS	10.3390/polym11121916	59
SHIN J, 2020, J HAZARD MATER	10.1016/j.jhazmat.2020.123102	59
STEFANELLO N, 2019, FOOD CHEM TOXICOL	10.1016/j.fct.2018.10.005	58
MATOBAN, 2020, NAT HUM BEHAV	10.1038/s41562-019-0805-1	54
HUANG T, 2020, FOOD HYDROCOLLOIDS	10.1016/j.foodhyd.2019.105552	54

4 Conclusions

[2] investigates how UK coffee shops manage food waste and identifies that while the industry generates significant amounts of avoidable waste, managerial approaches mainly focus on disposal rather than prevention. Through qualitative research methods including interviews with managers, it was found that food waste is primarily caused by fresh produce, bakery items, and sandwiches, especially in larger outlets. Managers generally rely on traditional waste management practices but lack proactive measures. Barriers to effective waste minimisation include insufficient governmental support, imperfect legislation, internal resource constraints like time, money, and staffing, and irresponsible consumer behaviour. The paper suggests that targeted policy interventions are needed to strengthen corporate commitments and promote environmentally responsible consumer habits within the coffee shop sub-sector. [3] investigates the food waste management practices in UK coffee shops, revealing that environmental sustainability, particularly regarding food waste, is not a priority in corporate reporting. Major chains

like Starbucks, Costa Coffee, and Café Nero do not adequately address food waste generation despite its significant occurrence in the sector. While they focus on ethical sourcing, recycling generic waste, and composting coffee grounds, issues such as misleading claims about recyclable cups and the difficulty of implementing a zero-waste policy are evident. Limited attention is given to food donation, an effective means of reducing waste, with only non-specialist brands like Greggs and Pret-a-Manger actively participating. The research identifies a lack of governmental support and clear legislation as key barriers to better waste reduction strategies within the industry. To improve food waste management in coffee shops, there is a need for integrated policy interventions to strengthen business commitment and encourage pro-environmental consumer behavior through education and awareness campaigns. Future research should explore more proactive managerial approaches across different outlet categories, charity shop managers' roles in facilitating donations, supplier engagement upstream, recipient perspectives on donated food, geographical differences in waste management, and measures to reduce single-use cup waste.[4] explored changes in dietary habits and lifestyle behaviors among Kuwaiti adults during the COVID-19 pandemic. Using an online questionnaire, they collected data from 415 participants between March and April 2020, finding that while breakfast skipping rates remained steady with a slight increase, late-night snacking and home-cooked meals significantly increased due to lockdowns. Fast-food consumption dropped sharply, and there was a decrease in Americano coffee and fresh juice intake likely linked to closures of coffee shops and limited fruit availability. Physical activity decreased and sedentary behavior rose, while sleep patterns shifted towards more daytime sleep. The study highlights the impact of the pandemic on daily routines and emphasizes the importance of nutrition education campaigns for maintaining health during such crises.

In term of research topics, which are presented in Figure 1, the topics locate in the first quadrant is the motor themes [5]. These themes are important for this area and need further investigating.

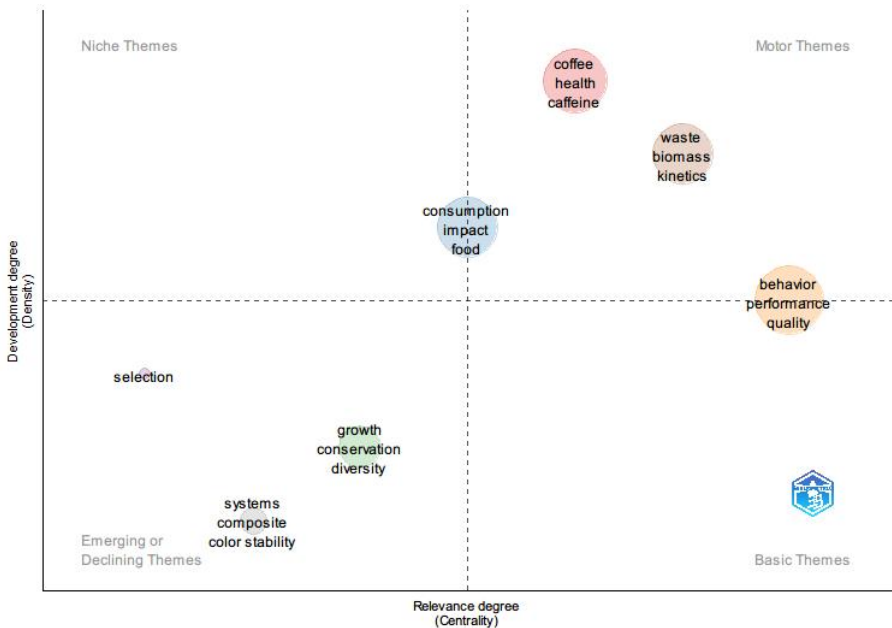


Fig. 1. Thematic map

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