

Lecture Notes in Networks and Systems 839

Abrar Ullah
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Proceedings of International Conference on Information Technology and Applications


ICITA 2023

 Springer

Lecture Notes in Networks and Systems

Volume 839

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ICITA 2023

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ISSN 2367-3370

ISSN 2367-3389 (electronic)

Lecture Notes in Networks and Systems

ISBN 978-981-99-8323-0

ISBN 978-981-99-8324-7 (eBook)

<https://doi.org/10.1007/978-981-99-8324-7>

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Preface

This conference addresses the importance that IT professionals, academics and researchers stretch across narrowly defined subject areas and constantly acquire a global technical and social perspective. ICITA 2023 offers such an opportunity to facilitate cross-disciplinary and social gatherings. Due to breadth and depth of the topics, it is challenging to class them into specific categories, however, for the convenience of readers, the conference covers a wide range of topics which are broadly split into software engineering (SE), machine learning, network security and digital media and education.

The need for novel SE tools and techniques which are highly reliable and greatly robust is order of the day. There is a greater understanding that design and evolution of the software systems and tools must be “smart” if it is to remain efficient and effective. The nature of artifacts, from specifications through to delivery, produced during construction of software systems can be very convoluted and difficult to manage. A software engineer cannot find all its intricacies by examining these artifacts manually. Automated tools and techniques are required to reflect over business knowledge to identify what is missing or could be effectively changed while producing and evolving these artifacts. There is an agreed belief among researchers that SE provides an ideal platform to apply and test the recent advances in artificial intelligence (AI) tools and techniques. More and more SE problems are now resolved through the application of AI, such as through tool automation and machine learning algorithms.

Machine learning is a broad subfield of computational intelligence that is concerned with the development of techniques that allow computers to “learn”. With an increased and effective use of machine learning techniques, there has been rising demand for the use of this approach in different fields of life. There is a wider application of machine learning in different domains of computer science including e-commerce, software engineering, robotics, digital media and education and computer security. Given the opportunities and challenges of the emerging machine learning applications, this area has a great research potential for further investigation.

The growth of data has revolutionized the production of knowledge within and beyond science, by creating efficient ways to plan, conduct, disseminate and assess high-quality novel research. The past decade has witnessed the creation of innovative

approaches to produce, store and analyze data, culminating in the emergence of the field of data science, which brings together computational, algorithmic, statistical and mathematical techniques toward extrapolating knowledge from ever-growing data sources. This area of research is continuously growing and attracts a lot of interest.

Computer security is a process of protecting computer software, hardware and networks against harm. The application of computer security has a wider scope, including hardware, software and network security. In the wake of rising security threats, it is eminent to improve security postures. This is an ongoing and active research area which attracts a lot of interests from researchers and practitioners.

With the advent of the Internet and technology, the traditional teaching and learning has largely transformed into digital education. Teachers and students are significantly reliant upon the use of digital media in face-to-face classrooms and remote online learning. The adoption of digital media in education profoundly modifies the landscape of education, particularly with regard to online learning, e-learning, blended learning and face-to-face digital-assisted learning, offering new possibilities but also challenges that need to be explored and assessed.

The International Conference on Information Technology and Applications (ICITA) is an initiative to consider the above-mentioned considerations and challenges. Besides the above topics, International Workshop on Information and Knowledge in the Internet of Things (IKIT) 2023 was run in conjunction with ICITA 2023 with a focus on Internet of Things (IoT).

ICITA 2023 was able to attract 117 submissions from 21 different countries across the world. From the 117 submissions, we accepted 52 submissions, which represents an acceptance rate of 44%. Out of 52, IKIT 2023 received 17 submissions with 7 accepted papers. Out of all submissions, 52 were selected to be published in this volume. Each submission is reviewed by at least two to three reviewers, who are considered experts in the related submitted paper. The evaluation criteria include several issues, such as correctness, originality, technical strength, significance, quality of presentation, interest and relevance to the conference scope. This volume is published in Lecture Notes in Networks and Systems Series by Springer, which has a high SJR impact.

We would like to thank all Program Committee members as well as the additional reviewers for their effort in reviewing the papers. We hope that the topics covered in ICITA proceedings will help the readers to understand the intricacies involving the methods and tools of software engineering that have become an important element of nearly every branch of computer science.

We would like to extend our special thanks to the keynote speakers, David Tien, Senior Lecturer, Charles Sturt University and Vice Chairman, IEEE Computer Chapter, NSW, Australia and Prof. Álvaro Rocha, Professor, University of Lisbon,

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Consciousness Levels and Their Consequences on Consumer Behavior—A Systematic Review and Bibliometric Analysis



Marcelo Leon , Joel Fortis , and Luis Musso 

Abstract The objective of this study was to evaluate the volume and quality of academic contributions through a bibliometric analysis, considering the publications carried out in databases indexed to Scopus. 277 articles were identified, where the year with the best performance was 2019. The empirical evidence is still in a period of academic maturity; however, the absence of deepening the analysis does not allow establishing concrete results in a subjective area such as personality and behavior human beings in a consumer role. A comprehensive evaluation of the factors that motivate consumption habits would help to establish more concrete results on the subject..

Keywords Personality · Attitude · Consciousness · Consumption · Behavior · Needs

1 Introduction

The swift pace of technological evolution has ushered in a new era where businesses must pivot and adapt to remain competitive. In this dynamic landscape, the convergence of business intelligence and the expansive realm of social networks presents a realm of transformative possibilities.

To improve the sales strategies of companies, it is very important to know the factors that motivate the individual to prioritize their consumption choices, from the unconscious to the results of the experience acquired in daily life. Schiffman and

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Kanuk (2000) indicate that the individual's needs motivate him to consume different goods and services on the market; however, the habits that determine the priorities of his consumption can originate in different aspects of his personality. For companies in their desire to obtain highest economic returns, it is essential to determine what aspects of the human personality define their potential consumers, in order to launch better sales strategies.

The present investigation shows an analysis of the empirical evidence on the influence of personality on the consumption of goods and services, the study period covers from 1983 to 2023, with the aim of carrying out a systematic bibliometric study on the scientific production around the levels of consumer values and the use of the dynamic spiral theory in consumer behavior. Methodologically, the bibliometric analysis was carried out with publications indexed to Scopus, using a historical database on consumption, behavior, personality and attitude, reviewing the abstracts and keywords of each of them, obtaining a total of 277 publications.

The number of publications has been low; however, in the past five years it has been an increase relation to their historical base. It should be noted that the publications belong to journals of high academic impact. Besides, it is necessary to mention that the composition of the authors' community is still dispersed and does not show a cohesion to reach a deep insight of the results obtained.

2 Literature Review

The theory of the spiral dynamics established by Graves in 1952, which categorizes the definitions of the human personality in mature age, considering them as levels of existence, which consists in the first place, expressing impulsively; then sacrificing for a future reward; then expressing as you wish in a calculated way; sacrificing to be accepted now; and finally, to express as you wish without affecting others.

Maslow's (1943) models hierarchize human needs through a pyramid, with the most "basic" needs at the bottom and the needs for "personal fulfilment" at the top, the latter pairing up to the existence of a final stage of full psychological development. Subsequently, Graves in 1959 intuited that the psychological maturity of the human being was an infinite behavioral process, developed over time and according to the experiences of the individual, proposing it as an oscillating process, unfolding in a spiral manner.

The bio psychosocial model proposed by Graves in 1943 refers that psychological maturity evolves within eight existential grades grouped into four levels, passing from one level to another.

The first existential level consists of the subsistence of the individual alone or in a group. At the AN-BEIGE level, the individual focuses on satisfying their primary or physiological needs (breathing, food, hydration, hygiene and rest); at the BO-PURPLE level, the individual resorts the security provided by living in community and the sense of cultural–social belonging.

The second existential level is based on personal and social identity. At the CP-RED level, the individual is aware of personal potential and strength; at the DQ-BLUE level, interpersonal relationships and lifestyle contribute to the individual and its existence.

The third existential level guarantees material and emotional satisfaction. Once the individual has satisfied physiological and socialization needs, the personal welfare is the goal. At the ER-ORANGE level, a sensation of well-being through the satisfaction of material needs (comfort and addictions) is expected; whether at the FS-GREEN level, the individual is driven to seek its personal well-being by establishing emotional and affective relationships with other individuals.

At last, in the fourth existential level, the individual tries to rebuild as a human being and rebuild its environment facing certain negative impacts from the previous levels. The A'N'-YELLOW level implies personal development, which includes development of competencies, responsibilities and autonomy in response to the conflicts generated. In the B'O'-TURQUOISE level, the individual directs its perception of well-being toward a holistic vision (Beck and Cowan 2015).

In behavioral research, Schiffman and Kanuk (2000) address the consumer behavior as the conduct that consumers exhibit when selecting, buying, searching, evaluating, using, and disposing goods and services that, in their opinion, satisfy their needs. Consumer decisions revolve around the available resources such as time, money and effort to obtain articles related to consumption. Besides, means, origin, reasons, temporality, frequency, and conservation are studied and analyzed.

Within the study of consumer behavior, there are two types of consumers: personal and organizational. The personal consumer purchases goods and services for itself or its family, whether the organizational consumer acquires goods and services to operate within a for-profit or non-profit economic activity.

In the psychological field of consumption, there are three theories that stand out: Freudian theory, Neo-Freudian theory and traits theory. The Freudian theory indicates that the individual has molded its personality and is motivated by its unconscious needs of a biological nature. On the other hand, the Neo-Freudian theory mentions that the personality of the individual is influenced by the environment. Finally, the traits theory focuses on the identification of distinctive elements that differentiate individuals, indicating that personality is related to the way individuals make their decisions rather than to some specific aspect of them.

3 Methodology

Bibliometric studies in recent times have had an immense boom in research, thanks to the expectations generated by the conducted investigations and the ability to address large volumes of knowledge. These types of studies allow to know the performance of scientific development, study patterns and explore academic progress in a certain area of knowledge, its dissemination and location.

According to (López et al. 2009), bibliometric is important to evaluate academic publications through indicators such as productivity of publications, authors, publishing institutions, production by topic, citation analysis and impact, contributing to the development of quality knowledge.

This investigation is based on a three-stage procedure: definition of search criteria; database selection, results refinement and results analysis.

The database source data is Scopus, being the data extracted at January of 2023. The search was made, using on the field (TS) with the keywords “attitude/personality” and “consumer behaviour”.

The information obtained was analyzed, verifying errors and duplicate files, with the aim to ensure the data quality.

Microsoft Office Excel was used to process the data and to analyze the performance of scientific production. VOSviewer software was used to build two-dimensional bibliometric networks represented by simple graphs.

Bibliometric analyzes present two approaches: performance analysis and bibliometric mapping. The first examines scientific production and its impact by evaluating authors, countries, publications and affiliations. The second approach includes the bibliometric mapping or mapping of science, which allows to analyze the intellectual structure of the field of study through information from the nuclear level of its structure (co-occurrence of keywords), meso (co-citation of authors) and macro (co-citation of journals).

4 Analysis of the Data

The analysis of the evolution of research on levels of consciousness and consumption behavior can be divided into two parts. The first part, from 1987 to 2013, in which only 9% of the total scientific production was published. During this period, the number of publications does not exceed two per year, except for the year 2012, which has six publications on the field. In that period, the publications accumulated a total of 2201 citations, and also, there is no author or co-author who has published more than one paper. The second part, from 2014 to 2023, shows a great boom in the volume of publications, constituting 81% of the scientific production on the subject to date. The publications in this period obtain 5548 citations, unlike the previous period, authors have made more than one publication (Fig. 1). The outstanding case is Calvo-Porrá C., who has published research papers related to the subject in 2016, 2017 and 2019.

Table 1 shows the performance of the journals indexed to Scopus that mention the topic, taking into account aspects such as the number of scientific articles (AT), the quartile of the journal, the percentage of contribution (%), the H-index (HI), the impact score (IS) and lastly, SCImago Journal Rank (SJR).

The ten journals with the most publications concentrated 80% of the publications, registering the volume of 221 publications out of the 277 analyzed, with 7749 citations in total; British Food Journal has contributed 58% of the studies, with 23% of

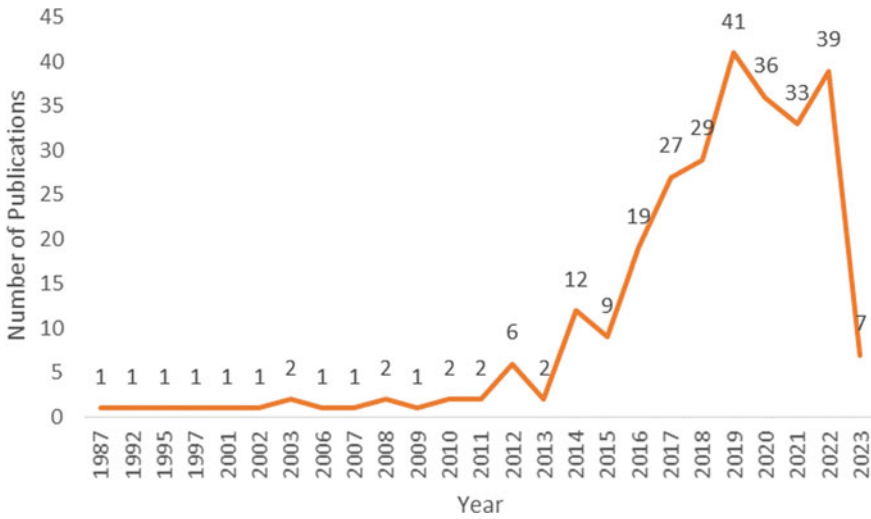


Fig. 1 Volume of the number of publications, 1987–2023, (n = 277)

Table 1 Performance of the journals indexed to Scopus

Journal	Number of publications	% Contribution	Quartile	H	SRJ
British food journal	128	58%	Q2	86	0.61
Journal of cleaner production	31	14%	Q1	232	1.92
Health marketing quarterly	24	11%	Q3	28	0.27
Evaluation and program planning	9	4%	Q2	64	0.55
Journal of retailing and consumer services	8	4%	Q1	104	2.26
Technological forecasting and social change	7	3%	Q1	134	2.34
Electronic commerce research and applications	5	2%	Q1	82	1.37
International journal of culture, tourism and hospitality research	3	1%	Q2	36	0.6
Journal of healthcare management	3	1%	Q3	50	0.34
Journal of neuroscience, Psychology and economics	3	1%	Q3	27	0.32

Table 2 Academic contribution by author

Author	Publications
Calvo-Porrall	3
Pagnanelli	2
Vittuari	2
Wang	2
Cangelosi	2
Cerri et al.	2
Filimonau et al.	2
Moser and Loudon	2
Notaro and Paletto	2

the total citations, likewise, the Journal of Cleaner Production has contributed 14% of the scientific production, obtaining 24% of the total citations. On the other hand, the Health Marketing Quarterly Journal has contributed with 11% of the publications, obtaining 2% of the total citations.

40% of the ten journals with more publications belong to the Q1 quartile, which means that there are journals such as Journal of Cleaner Production, Journal of Retailing and Consumer Services, Technological Forecasting and Social Change, Electronic Commerce Research and Applications with high impact in the academic community. However, out of the total of lower impact journals such as British Food Journal, Evaluation and Program Planning, International Journal of Culture, Tourism, and Hospitality Research, 30% belong to the Q2 quartile. Journals such as Health Marketing Quarterly, Journal of Healthcare Management, Journal of Neuroscience, Psychology and Economics belong to the Q3 quartile.

Table 2 analyzes the academic contribution by author, considering the authors who have more than one publication on the subject, according to the Scopus database.

Calvo-Porrall records three contributions, especially in food retailing. The role of purchase frequency and determinants of customer satisfaction and loyalty (Calvo-Porrall and Levy-Mangin 2016), examining the role of product's perceived quality (Calvo-Porrall and Lévy-Mangin 2017) and situational factors in alcoholic beverage consumption: Examining the influence of the place of consumption (Calvo-Porrall and Levy-Mangin 2019), with a total of 27 citations from the three contributions.

Pagnanelli shows two contributions: Analysis of factors affecting the purchase of private label products by different age consumers (Pagnanelli et al. 2022) and factors affecting the purchase of private label food products (Pagnanelli et al. 2022), making a total of seven citations from the referred contributions.

Vittuari contributes with two publications: Consumer's food cycle and household waste (Vittuari et al. 2018) and when behaviors matter Italian consumer's income and food waste behavior (Vittuari et al. 2016), achieving 148 citations in total.

Wang has published two articles: Recommendation influence: Differential neural responses of consumers during shopping online (Guo et al. 2016) and face to purchase: Predicting consumer choices with structured facial and behavioral traits

embedding (Liu et al. 2022). Both publications have been referred 17 times by other authors.

Cangelosi focuses in two publications relating health care and social media. Preventive healthcare information and social media: Consumer preferences (Cangelosi et al. 2021) and a needs assessment study of what healthcare consumers seek from social media and social networking (Cangelosi et al. 2018), reporting at least 1 citation.

Cerri et al. totalize two contributions with 136 citations. The mentioned articles are: The more I care, the less I will listen to you: How information, environmental concern, and ethical production influence consumer's attitudes and the purchasing of sustainable products (Cerri et al. 2018), and factorial surveys reveal social desirability bias over self-reported organic fruit consumption (Cerri et al. 2019).

Filimonau et al. address the determinants of consumer engagement in restaurant food waste mitigation in Poland: An exploratory study (Filimonau et al. 2020) and national culture as a driver of pro-environmental attitudes and behavioral intentions in tourism (Filimonau et al. 2018), with 103 citations in total.

Moser et al. bring up two topics related to medical advertising in their contributions. An empirical analysis of consumer's attitudes toward pharmacies' advertising (Moser et al. 2018) and an empirical analysis of ethical and professional issues in physician's advertising: A comparative cross-sectional study (Moser et al. 2016) accumulate four citations between both contributions.

Notaro and Paletto introduce industry topics involved with consumption: Consumers' preferences for bioplastic products: A discrete choice experiment with a focus on purchase drivers (Notaro et al. 2022) and consumer's preferences, attitudes and willingness to pay for bio-textile in wood fibers (Sandra and Alessandro 2021), with 19 citations between their two contributions.

Table 3 details the ten most cited papers on this topic. The data indicates that the 277 publications considered sum up a total of 7749 citations.

Among the ten most cited publications on the subject, the article consumer behavior and purchase intention for organic food: A review and research agenda (Rana and Paul 2017) stands out, being cited 456 times in other investigations. This work analyzes the factors that influence a healthier consumption due to the trend and need to improve the quality of life through food. In second place, the article who is the wine tourist? (Charters and Ali-Knight 2002) appears being cited 401 times by other authors, the publication considers the motivations of visitors to consume wine tourism product in Australia. The third article that leads the top most cited articles is The Effects of Environmental Concern on Environmentally Friendly Consumer Behavior: An Exploratory Study (Minton and Rose 1997) with 359 citations. This study addresses the importance of personal attitude, formal norms and habits in the environment friendly consumption trend.

In the case of academic publications about the psychological existential level of an individual related to consumer behavior, Fig. 2 shows 15 clusters; however, they show dispersed intellectual integration networks with respect to other topics, of which three stand out.

Table 3 Ten most cited papers

Title	Citations
Consumer behavior and purchase intention for organic food: a review and research agenda	456
Who is the wine tourist?	401
The effects of environmental concern on environmentally friendly consumer behavior: an exploratory study	359
The impact of consumer trust on attitudinal loyalty and purchase intentions in B2C e-marketplaces: intermediary trust vs. seller trust	356
Online travel reviews as persuasive communication: the effects of content type, source, and certification logos on consumer behavior	327
What affects green consumer behavior in China? A case study from Qingdao	327
A fresh look at understanding green consumer behavior among young urban Indian consumers through the lens of theory of planned behavior	200
The effects of web personalization on user attitude and behavior: an integration of the elaboration likelihood model and consumer search theory	182
Leveraging factors for sustained green consumption behavior based on consumption value perceptions: testing the structural model	179
Evaluating firms' R&D performance using best worst method	153

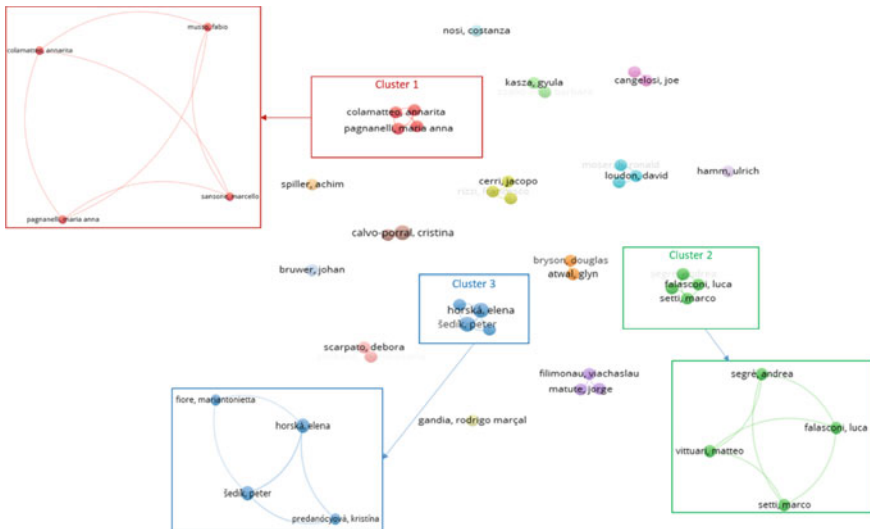


Fig. 2 Academic production network

The first cluster shows that Colamatteo Annarita, Musso Fabio, Pagnanelli Maria Anna and Sansone Marcello are related to each other. In the second cluster, as shown in Fig. 2, there are four authors that are related to each other: Vittuari Mateo, Setti Marco, Falasconi Luca and Segrè Andrea. Within the third cluster, Horská Elena, Šedfk Peter and partially Predanócyová Kristína are related to each other.

5 Conclusions

This research explores the intellectual production about consumer behavior focused on the levels of psychological maturity of the individual or the theory of spiral dynamics. Empirical evidence shows that the studies carried out on the subject in general still have a reduced level of development in relation to the field of study; however, the contributions that have been made are mostly of high impact within the academic community, published in journals of great importance and prestige according to the rankings. Besides, there is little integration between the authors who publish in the field. These results show that there is an urgent need for extensive further research on individual behavior to verify the correlation between personality and consumption habits.

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