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Brand Reference Analysis Using Semantic Scholar: A Bibliographic Perspective

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Abstract

This study aims to analyze the development of brand knowledge through a bibliometric perspective using the Semantic Scholar tool, which integrates artificial intelligence (AI) technology to analyze academic articles and citation links. The results of the analysis found that articles about brands have grown continuously, especially since 2010, reflecting the importance of brands in the digital age where technology and online marketing play important roles. The most cited article is "Conceptualizing, Measuring, and Managing Customer-Based Brand Equity" by Keller (1993), which has been cited 13,988 times. The results of the study also indicate that the business field has the most relevant articles (42.52%), and brand research emphasizes the connections between research networks and the role of related theoretical concepts. This study is important in helping researchers and brand practitioners understand knowledge structures, research trends, and opportunities for developing branding strategies in the future. The results of this bibliometric analysis also enhance the understanding of appropriate brand management methods in the rapidly changing digital age.

Keywords: bibliometric analysis, branding, Semantic Scholar, brand strategy, brand equity

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Introduction

In this highly competitive digital age, branding has emerged as an essential strategic tool for organizations seeking to build competitive advantages and ensure sustainable success within the marketplace (Lane Keller, K., 2013). Brand research has therefore received continued interest from scholars worldwide, as evidenced by the increasing volume of publications in reputable academic databases such as Scopus, Web of Science, and Semantic Scholar (Saleem, F., Khattak, A., Ur Rehman, S., & Ashiq, M., 2021).

However, given the vast and diverse literature related to branding, a thorough understanding of the evolution and contemporary trends in brand knowledge remains a significant challenge for both researchers and practitioners (Veloutsou & Guzmán, 2017). Examining citation analysis has become a widely adopted approach for systematically exploring the progress and trajectories of different academic disciplines. Highlighting citation networks and publication trends facilitates the identification of in-depth research, key theories, and connections between scholarly works (Donthu, N., Kumar, S., Mukherjee, D., Pandey, N., & Lim, W. M., 2021).

Recent advances in artificial intelligence have facilitated the creation of sophisticated bibliographic measurement tools, exemplified by Semantic Scholar, which uses deep semantic analysis to elucidate complex relationships between scholarly works (Ammar et al., 2018). In contrast to traditional bibliographic measurement systems, Semantic Scholar's platform can provide enhanced insights into the contextual importance of citations, subject-specific clusters, and interdisciplinary connections, while providing access to a vast repository of over 223 million scholarly articles (Semantic Scholar, 2024).

Although the topic of branding has been the subject of scholarly research for over a century, there has been little bibliographic review using sophisticated AI-driven methods to examine the progress of branding scholarship, particularly using Semantic Scholar as a repository (Varsha et al., 2021). The purpose of this research is to address this shortcoming by examining the reference frames and intellectual paradigms of branding studies from their historical roots to contemporary developments through the analytical capabilities provided by Semantic Scholar.

Content

From searching the Semantic Scholar program with the keyword, it was found that there were 2 oldest articles starting from 1931: Quick profit yours from these oak brand shrubs and roses, which could not be searched (Co., C., 1931) and A study of the selection, care and wearing qualities of silk hosiery, which studied the popularity and factors in purchasing silk

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stockings by women. The study was based on sales data from fifteen stores and interviews with two hundred and fifty women. The sales data showed a variety of brands and prices. The interviews revealed that women were concerned with price, color and quality of the stockings. All this information helps to better understand the purchasing behavior and needs of consumers regarding silk stockings (Baker, V., 1931). The results of searching the Semantic Scholar program found a total of 443,000 items, divided into various categories as shown in Table 1.

Table 1 Number of Articles in Each Field of Study

Order number	Field of study	Number of articles	%
1	Business	216,000	42.52
2	Medicine	62,800	12.36
3	Economics	41,900	8.25
4	Environmental Science	38,700	7.62
5	Computer Science	34,300	6.75
6	Engineering	29,300	5.77
7	Sociology	28,900	5.69
8	Psychology	22,200	4.37
9	Agricultural and Food Sciences	17,200	3.39
10	Education	16,700	3.29

From Table 1, it shows the number of articles in each subject area, the number of articles published in each subject area, and the percentage compared to all articles. The analysis of data in this table uses the method of calculating the percentage of articles in each subject area compared to the total number of articles to show the role and importance of each subject area in the academic publication circle as follows: Business has the highest number of articles at 216,000 articles, accounting for 42.52% of the total, Medicine has 62,800 articles, accounting for 12.36%, Economics and environmental science have articles accounting for 8.25% and 7.62%, respectively, Education has the least articles at 16,700 articles, accounting for only 3.29% Some articles are linked to multiple disciplines and are included in several categories in the classification of subjects.
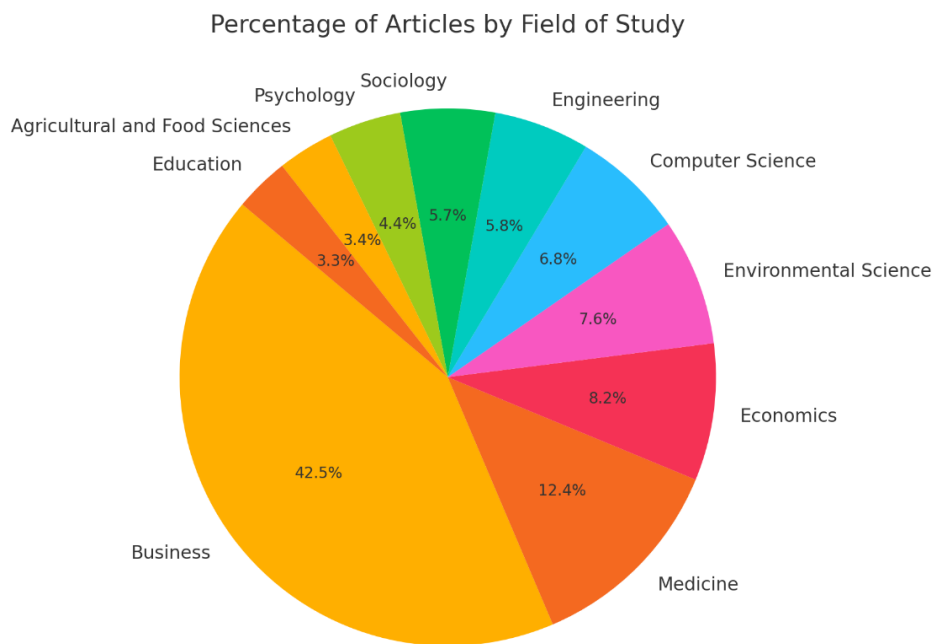
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Figure 1 Percentage Of Articles By Field Of Study
Source: ChatGPT4o Image Generator

This pie chart shows the proportion of academic articles in each subject area compared to the total number of articles. Business has the largest number of articles, accounting for 42.5% of the total, followed by medicine at 12.4%, economics at 8.2%, environmental science at 7.6%, computer science at 6.8%, engineering at 5.8%, sociology at 5.7%, psychology at 4.4%, agricultural and food science at 3.4%, and education at 3.3%. This reflects that business is the most important subject for publishing academic work, followed by medicine and other sciences. While humanities and education, despite having fewer articles, still play an important role in the overall development of society in a balanced way.
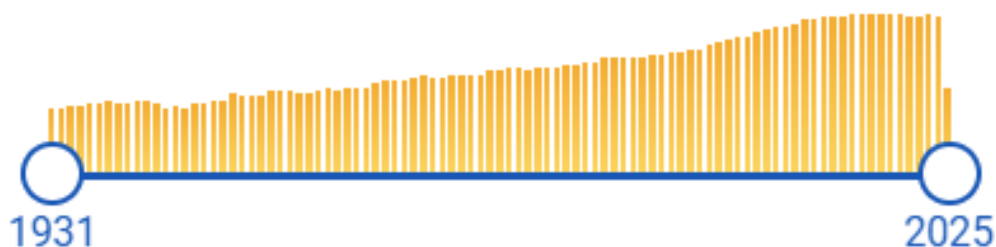

Figure 2 Trends in articles related to Branding
Source: Semantic Scholar

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Figure 2 shows the trend of articles related to Branding from Semantic Scholar. It shows that during the period 1931-1980s, the number of related articles was relatively low and increased slowly before starting to increase steadily after the 1980s and peaking in the 2010s, reflecting the increasing importance of branding, especially in the digital age where technology and online marketing play a significant role.

Table 2 Number of Articles Published from top journals & conference

Order number	top journals & conference	Number of articles	1931-1980s	1981-2000s	2001-2025s
1	Social Science Research Network	1,020	0	2	1,018
2	Sustainability	920	0	0	920
3	Advances in Economics, Management and Political	680	0	0	680
4	PLoS ONE	670	0	0	670
5	Journal of Brand Management	610	0	0	610
6	Tobacco Control	600	0	0	600
7	British Medical Journal	560	90	100	370
8	arXiv.org	400	0	0	400
9	Global Fashion Management Conference	390	0	0	390
10	Journal of Advertising Research	370	0	10	360

Table 2 shows the number of articles published in leading journals and academic conferences, with Social Science Research Network having the highest number of articles at 1,020, followed by Sustainability at 920, Advances in Economics, Management and Political at 680, PLoS ONE at 670, Journal of Brand Management at 610, Tobacco Control at 600, British Medical Journal at 560, arXiv.org at 400, Global Fashion Management Conference at 390, and Journal of Advertising Research at 370.

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Table 3 Top-Cited Research Articles on Brand Equity

Order number	Title of research article	Author	Journal/Source	Year of publication	Number of citations
1	Conceptualizing, Measuring, and Managing Customer-Based Brand Equity	Keller, K.L.	Journal of Marketing	1993	13,988
2	Dimensions of Brand Personality	Aaker, J.L.	Journal of Marketing Research	1997	6,865
3	The Chain of Effects from Brand Trust and Brand Affect to Brand Performance: The Role of Brand Loyalty	Chaudhuri, A., & Holbrook, M.B.	Journal of Marketing,	2001	6402
4	Effects of Price, Brand, and Store Information on Buyers' Product Evaluations.	Dodds, W.B., Monroe, K.B., & Grewal, D.	Journal of Marketing Research	1991	4818
5	Brand Experience: What is It? How is it Measured? Does it Affect Loyalty	Schmitt, B.H., Zarantonello, L., & Brakus, J.J.	Journal of Marketing	2009	3813
6	Strategic Brand Management: Building, Measuring, and Managing Brand Equity	Grassl, W.	Journal of Consumer Marketing	2000	3664
7	Measuring Brand Equity Across Products and Markets	Aaker, D.A.	California Management Review	1996	3620

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Order number	Title of research article	Author	Journal/Source	Year of publication	Number of citations
8	Managing Brand Equity	Shocker, A.D., & Aaker, D.A.	Book	1991	3459
9	An examination of selected marketing mix elements and brand equity	Yoo, B., Donthu, N., & Lee, S.	Journal of the Academy of Marketing Science	2000	3449
10	'Managing Brand Equity: Capitalizing on the Value of a Brand Name'	Sutcliffe, J.	Journal of Brand Management	1993	3306

Table 3 shows the list of research articles with the highest citations on Brand Equity, consisting of article title, author, journal/source of publication, year of publication, and number of citations. The article with the highest citation is "Conceptualizing, Measuring, and Managing Customer-Based Brand Equity" by Keller, K.L., published in Journal of Marketing in 1993, with 13,988 citations, followed by the article "Dimensions of Brand Personality" by Aaker, J.L., published in Journal of Marketing Research in 1997, with 6,865 citations. Other articles in the table also show the importance of research on Brand Equity that has been widely cited in academic circles.
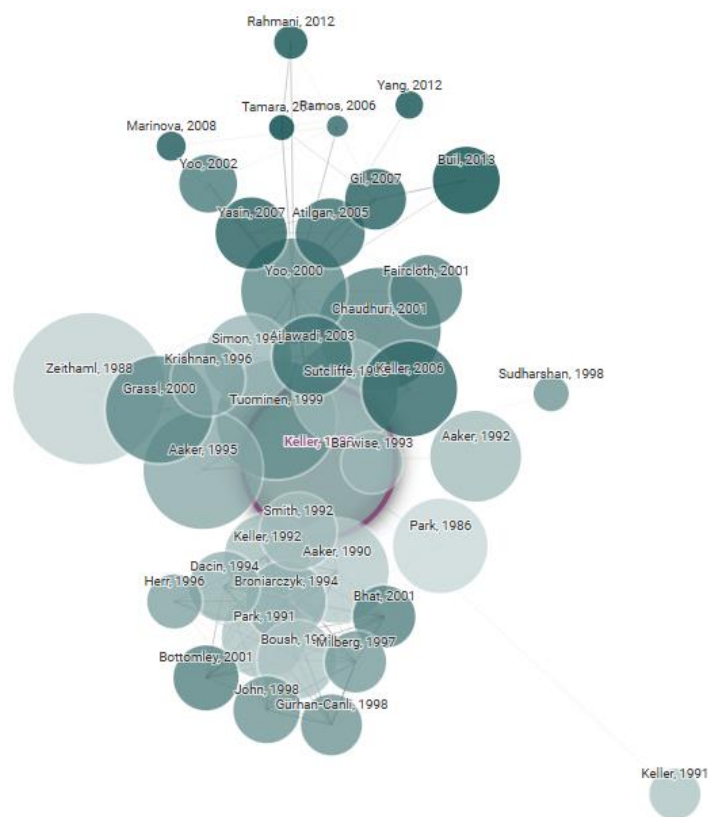
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Figure 3 Reference network of research on Customer-Based Brand Equity (Keller, 1993)
Source: connectedpapers.com program

Figure 3shows the citation network of the research article "Conceptualizing, Measuring, and Managing Customer-Based Brand Equity" by Keller (1993), which from Table 3 is the research article with the highest citations on Brand. This article is the center of the network of connections with other articles that cite this work. The size of the circles indicates the number of citations of each article, and the lines connecting the circles indicate the relationships between articles that have extended the knowledge from this research, which discusses the brand equity model from the consumer perspective, by defining brand equity based on knowledge about the brand that affects consumer responses. A brand will have positive (or negative) equity when consumers respond better (or worse) to the brand's marketing than (or less than) non-branded products or services. Brand knowledge consists of brand awareness and image, and the article also discusses issues in creating, measuring, and managing brand equity, including suggestions for future research (Keller, K.L., 1993).

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Summary and discussion

The Semantic Scholar tool, which uses advanced artificial intelligence (AI) technology to analyze research literature, is a key tool in this investigation. It is capable of assessing citation relationships and identifying scholarly articles with significant academic impact. For this study, a large database of over 223 million scholarly publications was used to examine trends and knowledge networks within the branding field. The analysis included categorizing articles by topic, identifying the most frequently cited works, and exploring the connections between research networks. Notably, the business sector comprised the majority of relevant articles, accounting for 42.52% of the total. The first publication in the branding field dates back to 1931. Therefore, the results of this study have valuable implications for both academic and practical use, benefiting researchers, educators, and branding professionals alike, who can leverage the insights and concepts gained from this analysis to improve and enhance branding strategies in the digital age. The study also highlights opportunities and gaps in the current knowledge that need to be further explored to effectively address future challenges in this field. The analysis also reveals that the article "Conceptualizing, Measuring, and Managing Customer-Based Brand Equity," written by Keller in 1993, was recognized as the most cited work. With an impressive 13,988 citations, this foundational article serves as the backbone of the brand equity citation network from a consumer perspective, describing the processes involved in the formation of brand image, brand knowledge, and both positive and negative consumer responses to brands. It also identifies effective strategies for building, measuring, and managing brands. This article delves into a comprehensive brand citation analysis using the Semantic Scholar tool, aiming to examine the evolution of brand knowledge and discern trends and connections within the research landscape related to this domain. The importance of branding in today's digital age has been recognized as a key strategy for fostering competitive advantage and ensuring corporate sustainability. As such, studies focusing on branding have attracted the attention of researchers worldwide, as these investigations can shed light on the advancement of relevant research in both theory and practical business applications. The trajectory of brand research indicates a continued increase in interest in the topic, especially since 2010, in line with the increasing importance of online technology and marketing in the contemporary digital landscape and and its evolution from basic online advertising to sophisticated data-driven campaigns, transforming the business landscape and influencing consumer behavior across the globe. (Nath, 2024) Digital branding enables deeper interactions with consumers, allowing brands to build stronger relationships and foster continued communication and engagement using digital platforms, which are essential for maintaining consumer interest and trust. (Denga et al., 2023) (Li, 2024) This study contributes

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to a better understanding of the evolution of brand knowledge, the networks formed by researchers' citations, and identifies key trends that may shape the future of research in this area. It also demonstrates the potential of bibliometric data analysis tools, such as Semantic Scholar, to facilitate more detailed and precise research.

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