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NET PROMOTER SCORE: BIBLIOMETRIC REVIEW OF THEORY AND PRACTICE

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Abstract
Purpose: This paper aims to provide a comprehensive bibliometric review of the academic discourse on the Net Promoter Score (NPS), a pivotal metric in customer relationship management, thereby broadening the understanding of its application and impact in academic research and practice. Method: The study examines a corpus of 464 publications indexed in the Scopus and Web of Science databases. The analysis encapsulates temporal progression, geographical distribution, publication types, top-cited papers, thematic foci, and collaborative dynamics, realized through co-authorship networks, among others. Findings: The findings suggest growing interest in NPS, particularly in the last five years, with the United States leading the discourse. Major themes like 'customer satisfaction,' 'customer loyalty,' and 'customer retention' were identified, among others, and indications of a moderately collaborative environment in the co-authorship networks. Originality: This study offers an encompassing perspective on the academic landscape of NPS, contributing to the limited body of bibliometric reviews on this topic. It holds value for researchers and practitioners interested in customer relationship management and its theoretical support.
Keywords: NPS; consumer satisfaction; bibliometric review; metrics; marketing.

INTRODUCTION

The concept of Net Promoter Score (NPS) has emerged as an influential metric within business and management, shaping strategies in customer satisfaction and loyalty management (Reichheld, 2003). Introduced by Fred Reichheld in the Harvard Business Review article "The One Number You Need to Grow", it aims to measure customers' willingness to recommend a company's products or

services to others (Reichheld, 2003). From its inception in the business domain, NPS has been adopted and utilized in a wide variety of fields, most notably in healthcare, where it serves as a robust tool for assessing patient satisfaction and quality of care (Zolnierek, 2019).

The NPS operates on a simple principle: customers are classified into promoters, passives, and detractors based on their responses to the question "How likely are you to recommend our company/product/service to a friend or colleague?" on a scale of 0-10 (Reichheld, 2003). The simplicity and practicality of the NPS have made it a popular choice among organizations, enabling them to gauge customer sentiment quickly and efficiently. However, while the NPS's simplicity is its strength, it is also a source of criticism, with some questioning the reduction of complex customer sentiment to a single metric (Morgan and Rego, 2006).

While Reichheld (2003) argued that the NPS could predict company growth better than other customer loyalty measures, subsequent empirical studies have questioned this claim. Morgan and Rego (2006), for instance, found that the NPS did not surpass other metrics in predicting company growth. This suggests that while it may be a valuable tool, it should be utilized alongside other customer loyalty measures to obtain a more comprehensive view of customer sentiment. Other critics focus on some aspects of its application, especially the common use of non-probabilistic sampling and its implications to confidence level and margin of error, although solutions to that have also been proposed (Sartori, 2023).

Its use has been particularly impactful in the field of healthcare, where patient satisfaction has become a key performance indicator. The healthcare sector has seen a shift towards patient-centric care models, emphasizing the importance of patient experiences and satisfaction (Zolnierek, 2019). This shift has led to the adoption of customer loyalty metrics to monitor and improve patient satisfaction (Bleich et al., 2009).

In healthcare, its application extends beyond gauging patient satisfaction. It serves as a valuable tool for improving healthcare quality and outcomes. By understanding patients' willingness to recommend healthcare services, providers can identify areas of improvement and implement strategies to enhance patient care (Al-Abri, 2017). In addition, it can help healthcare organizations benchmark their performance against industry standards, providing valuable insights for strategic planning (Boulding et al., 2011).

Despite the wide application, there is a lack of comprehensive bibliometric reviews exploring its theoretical foundations and practical applications. This gap is particularly noticeable in consumer marketing literature, where NPS's relevance and implications for marketing strategies remain relatively unexplored.

Therefore, this bibliometric review seeks to examine the academic landscape, providing insights into its theoretical underpinnings, practical applications, and implications for consumer marketing. As that field continues to evolve, so too does the importance of understanding metrics like NPS that provide critical insights into customer satisfaction and loyalty.

METHOD

The methodological approach for this study is a bibliometric analysis, a research method used extensively in various disciplines to provide quantitative analysis of academic literature (Broadus, 1987). Bibliometrics employ statistical and mathematical methods to analyse and map the various aspects of publications, such as authorship, sources, and subjects (Pritchard, 1969). This method provides a comprehensive overview of a given research field, contributing to the understanding of its scope, relevant themes, leading scholars, and intellectual structure.

The process involved several stages. Firstly, the literature on Net Promoter Score was collected using two major databases, Scopus and Web of Science, selected due to their extensive coverage of academic publications across multiple disciplines (Falagas et al., 2008). The search was conducted in June 2023, using the keyword 'Net Promoter Score,' which resulted in a corpus of academic publications for further analysis.

The next stage involved data cleaning and pre-processing, crucial for ensuring the accuracy and validity of the subsequent analysis (Khosrow-Pour et al., 2018). This process entailed removing

duplicate entries, correcting inaccuracies, and standardizing data formats. It is important to note that during this process, attention was given to maintaining the integrity of the data.

Following the cleaning process, the data was subjected to various bibliometric analyses, including co-authorship and keyword co-occurrence analysis, offering insights into the collaborative patterns among authors and the thematic concentration in the NPS literature (Van Eck & Waltman, 2010). Specifically, co-authorship analysis helps identify key authors and their collaborative networks, while keyword co-occurrence analysis elucidates the main research themes and their interrelations.

For the visualization of the co-authorship and keyword co-occurrence networks, VOSviewer, a software tool specifically designed for constructing and visualizing bibliometric networks (Van Eck & Waltman, 2010), was employed as its capabilities to handle large data sets and its flexible and intuitive interface make it an ideal tool for bibliometric analysis.

Further, to assess the types and subjects of publications, the distribution of countries, and the evolution of publications over time, descriptive statistical analyses were employed. These analyses served to provide a comprehensive overview of the NPS research landscape, highlighting its geographical distribution, thematic focus, and chronological development.

By combining different analytic methods and visualizations, this study seeks to offer a nuanced understanding of the key themes, authors, and trends shaping this field of research, serving not only to illuminate the current state of NPS research but also to guide future research directions and strategies.

FINDINGS AND DISCUSSION

The corpus of publications examined encompasses a variety of types, most prominently being articles which account for 72.2% of the total corpus. This substantial representation of articles underscores the prevalence of peer-reviewed research within the field. Journal articles are subject to rigorous review processes, and their prominence in this corpus suggests that a significant proportion of the research into the application of Net Promoter Score within healthcare settings is well-vetted, scientifically rigorous work.

The second most common type of publication, constituting 21.1% of the corpus, is conference papers that often represent more recent, yet-to-be-published research, indicating an active ongoing discourse within the scientific community concerning NPS in healthcare. It also suggests a good deal of the research is shared and debated in academic and professional forums before eventual journal publication.

Only 3.2% of the corpus consists of early access papers, which are articles accepted for publication but not yet formally published. The relatively smaller proportion of early access papers may indicate a fast turnover from acceptance to publication within this field, or perhaps a preference for disseminating research via other formats. Additionally, a minimal proportion of the corpus was represented by book chapters (1.3%), reviews (0.9%), books (0.4%), editorial material (0.4%), meeting abstracts (0.2%), and notes (0.2%).

The variety of publication types represented in the corpus speaks to the multifaceted nature of the research in this area. The prevalence of articles and conference papers suggests a dynamic and continually evolving field of study, characterized by active discussion and dissemination of findings in diverse formats. These formats, while varying in formal rigor, contribute to a broad and comprehensive exploration of the themes and topics associated with NPS in the healthcare context.

The analysis of the geographic distribution of publications, as shown on table 1, indicates that the field is being driven by a diverse array of countries. The United States stands out with the largest proportion of publications, with 22.0% of the total. The prominence of the United States aligns with the country's reputation as a significant contributor to scientific research in general and healthcare research in particular. Its dominance could also reflect the widespread adoption of the method in the country's healthcare sector, making it a significant area of research.

Table 1
Top 15 Countries in Number of Publications

Country	*Publications*	*%*
United States	*119*	*22.0%*
United Kingdom	*53*	*9.8%*
Australia	*30*	*5.6%*
Spain	*25*	*4.6%*
Netherlands	*23*	*4.3%*
Indonesia	*19*	*3.5%*
Germany	*19*	*3.5%*

Source: Research data.

The United Kingdom, Australia, Spain, and the Netherlands follow, with 9.8%, 5.6%, 4.6%, and 4.3% of publications respectively. The presence of these countries in the list is indicative of the widespread interest in its application across various cultural and geographic contexts. Moreover, the substantial contribution of these countries could potentially be associated with their robust healthcare systems, and the emphasis they place on patient satisfaction and healthcare quality improvement initiatives.

Notably, the list includes countries from diverse regions of the world, reflecting the global relevance of the research topic. Countries such as Indonesia, Germany, Poland, France, and Canada also contribute significantly to the corpus, further reinforcing the global interest in this area of research. A noteworthy presence is that of Indonesia, contributing 3.5% of the publications. As an emerging economy with a rapidly developing healthcare system, the interest in measuring and improving patient satisfaction might be expected.

Of interest is the 2.0% of publications from undefined countries, which may suggest international collaborations or difficulties in assigning a specific geographic location due to the multinational affiliation of authors. The list concludes with contributions from Brazil, India, Peru, Czech Republic, South Korea, and Greece, all of which contribute between 1.5% and 1.9% of publications. It is noteworthy that China, even though has a intense investment in education and a strong economy, shows only at the bottom of the top 15 countries in number of publications.

The analysis of the subject areas associated with the selected publications provides valuable insights into the multidisciplinary nature of the research being conducted. The most significant representation is "Business, Management and Accounting", accounting for approximately 7.32% of the publications. This aligns with the genesis of the NPS as a metric initially devised for customer satisfaction in the business sector, before being adopted in healthcare settings. The application of NPS in healthcare inherently involves aspects of management and accounting, particularly when evaluating healthcare services and patient experiences.

The second most represented category is "Computer Science", accounting for about 6.94% of the publications. This aligns with the previously observed prominence of digital health and machine learning within the most frequent keywords. The integration of NPS within computer science-related research areas suggests that NPS metrics may often be utilized in conjunction with digital health platforms, apps, or telemedicine services.

"Business", "Health Care Sciences Services", and "Medicine" make up the subsequent most represented categories, reinforcing the interdisciplinary and applied nature of the research on NPS within the healthcare sector. The strong representation of "Health Care Sciences Services" and "Medicine", in particular, underscores the relevance of NPS as a measure of patient satisfaction and its implication on healthcare services' evaluation and improvement. The high ranking of "Medicine" also indicates that the application of NPS is not limited to the study of healthcare services but has extended to medical practices and procedures as well.

The other categories, which include "Social Sciences", "Medical Informatics", "Engineering", "Economics, Econometrics and Finance", "Computer Science Information Systems", and "Management", among others, demonstrate the extensive reach of applications across a broad range of disciplines. These areas cover a wide spectrum, indicating a diverse set of methodologies employed and disciplinary lenses applied to the study of NPS. It should be noted that some categorization differences between Scopus and Web of Science might additionally contribute to the wide range of subjects. Despite these potential minor inconsistencies, the breadth of categories illustrates the versatile nature of NPS as a tool for understanding and improving patient satisfaction across various healthcare contexts.

Also, as shown on figure 1, there is a notable progression in the number of publications from 2005 to 2023. Commencing in 2005, the dataset presents a modest start, with only a single publication associated with the NPS. For the next five years, the publication frequency remains relatively low, with the frequency mode of the entire period being two publications per year, observed in 2008, 2009, and 2010.

From 2011 onwards, an evident upward trend begins to manifest and, specifically, the count for 2011 indicates an increase to ten publications, a substantial relative increase when compared to the previous mode of two. This trend persists throughout the next seven years, albeit at a slower growth rate, culminating in 23 publications in 2018 and, interestingly, the median number of publications per year for the period from 2005 to 2023 stands at 12, a figure first surpassed in 2017 and consistent with the observed growth trend.

A marked increase in publication frequency occurs in 2019, with 44 articles noted. This frequency further increases in 2020, reaching 57 publications, marking a period of accelerated scholarly attention, perhaps associated with the pandemic and the increased pressure in the healthcare system worldwide. In 2021, a similar trend continues, albeit with a slight decrease to 56 publications, indicating a sustained interest in the topic.

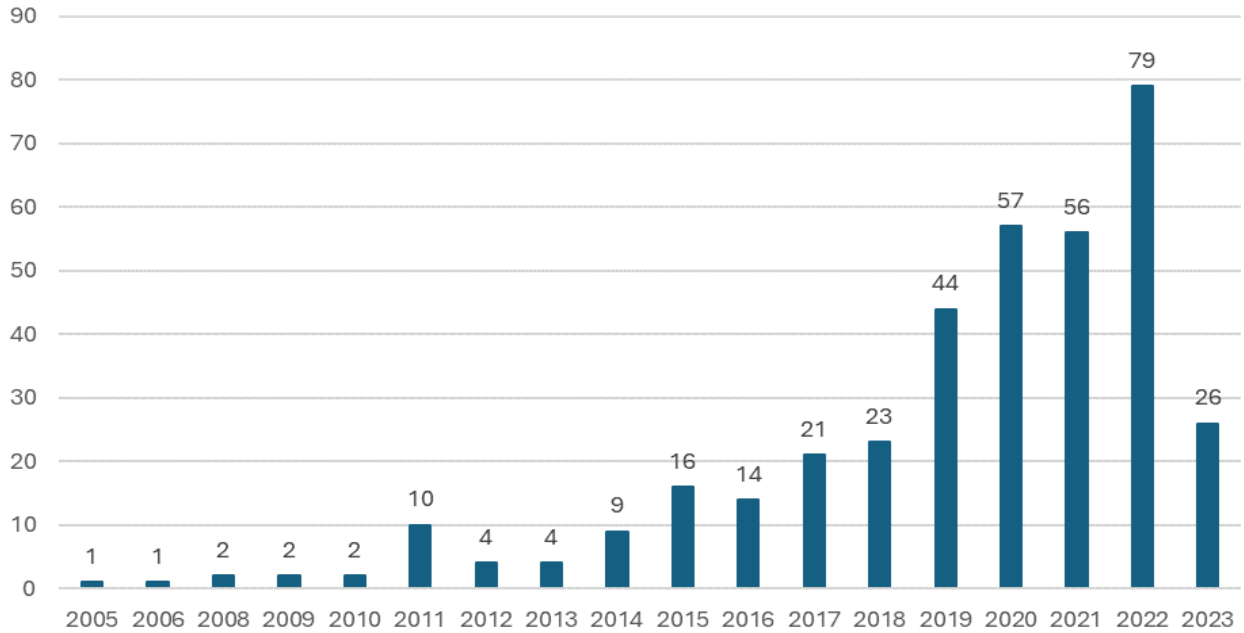

Figure 1. Publications per Year
Source: Research data.

The year 2022 records an unprecedented surge in the number of publications, peaking at 79. This represents the highest number of publications within the dataset and demonstrates an intensified focus among scholars. As for 2023, data for the year is still partial, given that the current review is conducted mid-year. Nevertheless, with 26 publications thus far, 2023 projects to maintain the momentum of high publication frequency.

The average number of publications per year stands at 20.61, indicating a sustained increase when juxtaposed with the mode and median. The highest publication frequency in 2022 and the promising start of 2023 underscore the growing recognition of the NPS in scientific discourse.

In scrutinizing the spread of publications across different journals and proceedings, an intricate distribution is discerned, as presented on figure 2. A total of 256 unique journals and proceedings have hosted articles during the span from 2005 to 2023, but the distribution of publications across these outlets is notably asymmetric. On average, each journal or proceedings has accommodated approximately 1.28 NPS-related publications. Yet, this average mask considerable variance as the median and mode both stand at a single publication per outlet, suggesting a significant skew towards a majority of outlets featuring just one NPS-related publication.

Leading the list in terms of frequency is the ACM International Conference Proceeding Series, hosting 11 publications. As an interdisciplinary platform with a broad scope, this conference series seems to underscore the cross-functional relevance in fields like marketing, service management, and customer relationship management, among others. A key element to notice here is the prevalence of conference proceedings, which often serve as a venue for more timely and emergent discussions among researchers.

The Journal of Medical Internet Research, the second most frequent outlet with seven publications, emphasizes the influence of the NPS in the healthcare sector. This is echoed by the inclusion of other health-related journals, such as Digital Health and the Journal of the American Medical Informatics Association, each hosting three publications. The prominence of healthcare-oriented journals reveals a significant interest in applying and studying NPS within healthcare contexts, likely driven by the sector's increased focus on patient satisfaction and experience as core quality measures.

Figure 2. Publications per Journal/Event
Source: Research data.

The International Journal of Market Research and Journal of Retailing and Consumer Services, with five and three publications respectively, represent more traditional marketing and consumer-focused outlets. The presence of publications in these journals reflects the role as a marketing tool and its relevance in assessing and improving consumer experiences and satisfaction.

Three publications have also been featured in the International Review on Public and Nonprofit Marketing, suggesting the application and relevance in public and nonprofit sectors, where understanding and improving the experiences of various stakeholders, not just customers, can be paramount.

Notably, three publications were hosted by the Harvard Business Review and MIT Sloan Management Review, two of the most influential and widely-read business publications. The appearance of discussions in these practitioner-oriented outlets underscores its applicability and interest to business practitioners and managers, beyond its relevance to academic scholars.

The distribution of co-authors per publication over the period from 2005 to 2023, as shown on table 2, suggests both the collaborative nature of scientific research and the varying degrees of complexity associated with different studies. An analysis of the data reveals that the average number of co-authors stands at 4.5, with the median at 4 and mode at 2. This data can be seen as a reflection of the standard size of research teams within the academic community. A peak is observed at two authors, accounting for 19.41% of the publications, followed closely by three authors at 19.14%.

Table 2
Types of Authorship of the Publications.

Number of Authors	*Publications*		*%*
26	1	0.3%	5.7%
18	1	0.3%	
17	2	0.5%	
16	3	0.8%	
15	1	0.3%	
14	3	0.8%	
13	3	0.8%	
12	2	0.5%	
11	5	1.3%	
10	10	2.7%	30.5%
9	5	1.3%	
8	18	4.9%	
7	26	7.0%	
6	15	4.0%	
5	39	10.5%	
4	56	15.1%	69.3%
3	71	19.1%	
2	72	19.4%	
1	38	10.2%	
Total	*112*	*100%*	*100%*

Source: Research data.

On the one hand, it could be inferred that studies with a lower number of authors, say one or two, might be reflective of individual or smaller team investigations that typically engage in narrow, often specialized, and deep explorations of the subject matter. These studies form a significant portion of the body of work, with single-author papers accounting for 10.24% of the publications.

The data also reveals a considerable volume of publications with higher numbers of co-authors. As the number of co-authors increases, so does the potential for a multi-disciplinary or multi-institutional approach to the study. For instance, the category of seven authors per paper, representing 7.01% of the publications, could be an indication of larger team collaborations, possibly across disciplines or geographical locations. This might suggest more extensive investigations that potentially cover a wider spectrum of the concept and its application, incorporating a diverse array of perspectives and methodologies.

Furthermore, the existence of a small percentage of papers with an extremely high number of authors (for example, one paper with 26 authors) might represent major collaborative projects or potentially signify the culmination of a substantial initiative, such as an international research project or a significant industry-academia collaboration.

As per the data and as shown on table 3, the average number of publications per author stands at 1.13, with a median and mode of 1. This signifies that most authors have contributed to a single publication within the field. However, there is a select group of prolific authors who have significantly exceeded this average, indicating a high degree of specialization and engagement with the concept.

Notably, five authors — Duckworth Andrew, D., George Kopsiaftis, Ioannis Georgoulas, Ioannis Rallis, and Kai Kristensen — stand at the top with seven publications each. Their repeated contributions could suggest a deep expertise in the field and a sustained interest in exploring different facets of NPS. The fact that their research output spans several publications points to a continuous engagement with the evolving discourse on NPS.

Furthermore, the presence of Ioannis Markoulidakis with six publications, and Nikolaos Doulamis and Anastasios Doulamis with five and four publications respectively, indicate that these researchers have made substantial contributions to the literature, pointing to the possible development of specific sub-themes or focal points within the broader scientific discourse.

Table 3
bAuthors with four or more publications

Author	*Publications*
Duckworth Andrew, D.	7
George, Kopsiaftis	7
Ioannis, Georgoulas	7
Ioannis, Rallis	7
Kai, Kristensen	7
Ioannis, Markoulidakis	6
Nikolaos, Doulamis	5
Anastasios, Doulamis	4
Arnd, Kleyer	4
David, Simon	4
Georg, Schett	4
Jacob, Eskildsen	4
Johannes, Knitza	4
McEachan Jane, E.	4

Source: Research data.

The list also includes several authors with three to four publications each, including Arnd Kleyer, David Simon, Georg Schett, Jacob Eskildsen, Johannes Knitza, and McEachan Jane, E. These

authors, by virtue of their multiple contributions, have helped to shape the contours of the academic debate, possibly from different disciplinary or methodological standpoints.

While a majority of authors have contributed to a single publication, as discussed before, and a notable minority have produced multiple works, suggesting a significant investment in the topic. The blending of diverse perspectives might have played a vital role in the multi-faceted development of the field.

Examining the top 20 authors in terms of co-authorship strength reveals that a notably robust collaboration exists among David Simon, Georg Schett, Johannes Knitza, and Nicolas Vuillerme, who form the first cluster with a co-authorship strength of 58. It is apparent that these scholars have repeatedly collaborated on multiple publications, indicating a high level of cohesion in their research interests, methodologies, or disciplines. This robust collaboration could suggest a highly specialized area of research within the wider field, where these authors may be leading voices.

Moreover, Dagmar Kettemann from the same cluster manifests a slightly lower yet considerable co-authorship strength of 43. Another strong tie is observed between Susanne Spittel, Thomas Meyer, and George Kopsiaftis in the second cluster, each displaying a co-authorship strength of 39. The synergy among these scholars could further highlight areas of concentrated research within the NPS literature.

A third cluster of authors, including Ioannis Georgoulas, Ioannis Rallis, and André Maier, present a substantial co-authorship strength of 33, reinforcing the existence of closely linked research groups within the NPS discourse. A keen examination of these three clusters offers an impression of shared research interests, and potentially, a more concentrated focus on specific facets of the NPS concept.

Within the first two clusters, several authors also show substantial co-authorship strength, including Ekaterina Eimer, Gerlinde Bendzuck, Marianne Korinth, Sebastian Boeltz, Gerhard Kroenke, and Hueber Axel, J. This suggests that these researchers have contributed to the collaborative endeavors within their clusters, potentially enhancing the diversity of perspectives and the depth of inquiry in their collective research.

The assessment of authorship within the literature takes a distinct turn when we consider the "score" of authors. This measurement, represented by the average year of publication, provides an opportunity to identify the most contemporary contributors to the field. A higher score corresponds to more recent publication activity, highlighting those researchers whose work aligns closely with the current trajectory of research.

In this context, the highest scores are observed for George Kopsiaftis, Ioannis Georgoulas, and Ioannis Rallis, each of whom boasts a score of 2020.7143. Previously noted for their significant co-authorship strength of 33 in their respective cluster, this additional measure illuminates their sustained activity in the most recent years of NPS research. Their high scores, combined with their robust co-authorship strength, underline their continued relevance and impact in the evolving corpus.

Similarly, Amber Sieja and Chen-Tan Lin from cluster 13, and Duckworth Andrew, D. from cluster 20, have scores of 2020.6667 and 2020.3333, respectively, placing them among the most contemporary contributors. Despite their lower co-authorship strengths, their high scores illustrate their recent contributions to the field, suggesting their active involvement in the current trends of research. Meanwhile, authors such as Kai Kristensen and Jacob Eskildsen, despite having lower scores of 2011.4286 and 2011.75, respectively, continue to contribute, denoting their enduring presence in the literature.

These figures reveal a dynamic scholarly community where veteran contributors maintain their relevance alongside emerging voices, as shown in the network view on figure 3. The interplay between established and nascent scholars could further enrich the multifaceted conversation surrounding NPS, contributing to its ongoing evolution. It is also noteworthy to highlight that the selected corpus presents a considerable high proportional number of unconnected clusters, that might indicate that related areas and applications of NPS might lack a central author or group of authors that navigate across them, indicating possible area-specific leading contributors and further showing the importance of the present aggregated review.

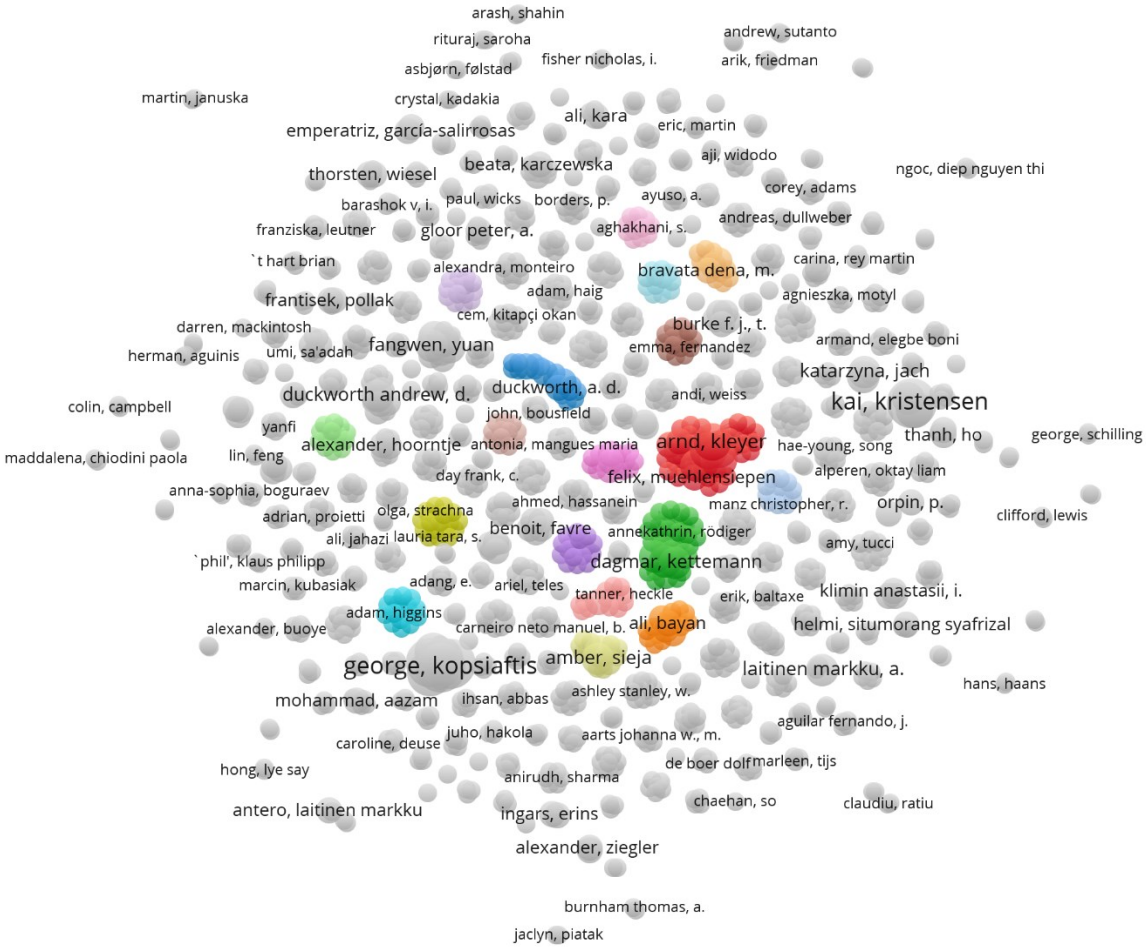

Figure 3. Network View of Co-Authorship
Source: Research data.

The co-occurrence of keywords in the literature examined provides insight into the thematic interconnections, as presented on figure 4. Not only does it suggest a degree of conceptual convergence, but it also highlights the multifaceted nature of the discipline as different areas of study interweave. For this analysis, the co-occurrence strength represents the frequency with which two keywords appear together in the same publication.

The keyword "NPS" and "telemedicine" are the most interlinked within the corpus, each boasting a co-occurrence strength of 62, and belonging to distinct clusters 23 and 22 respectively. Their robust interconnection denotes the frequent overlap between NPS-related concepts and the practice of telemedicine, pointing to the crucial role within telemedical applications and studies. Their prominence within separate clusters suggests that they each form central nodes within different spheres of discourse in NPS research.

"Net promoter score," "digital health," and "COVID-19" represent the next tier of interconnected themes, with co-occurrence strengths of 55, 51, and 48 respectively. These keywords underscore the significant intersection with the digital health arena, particularly in the context of the COVID-19 pandemic. This highlights how research is closely tied to technological health solutions and is significantly influenced by the global health crisis.

Keywords like "customer satisfaction," "mHealth," "satisfaction," and "net promoter score (NPS)" further show the prevalent themes in the field with co-occurrence strengths between 41 and 46. Notably, "customer satisfaction" and "satisfaction" imply a strong focus on customer or patient experience, likely reflecting the core principle of the metric.

Keywords "eHealth," "mobile health," and "patient satisfaction" each with strengths between 34 and 39, continue to reflect the strong association with technology-driven health solutions and the patient experience. This alignment further solidifies its role as a critical tool in evaluating and enhancing the patient experience in digital healthcare settings.

The least co-occurrence strengths in this list - "interoperability," "customer experience," and "health care" - with strengths of 23 and 22, still showcase the integration in wider discourses of healthcare delivery and customer experience. The term "interoperability" suggests the importance of seamless interactions among various digital health systems in enhancing customer experiences, an aspect that may be closely monitored using NPS.

These co-occurrence relations of keywords highlight the symbiotic relationships between core themes and shed light on how various aspects interrelate, often revolving around digital health solutions and customer experiences. These intersections of themes signify the interdisciplinary nature and the myriad contexts where it can be effectively employed.

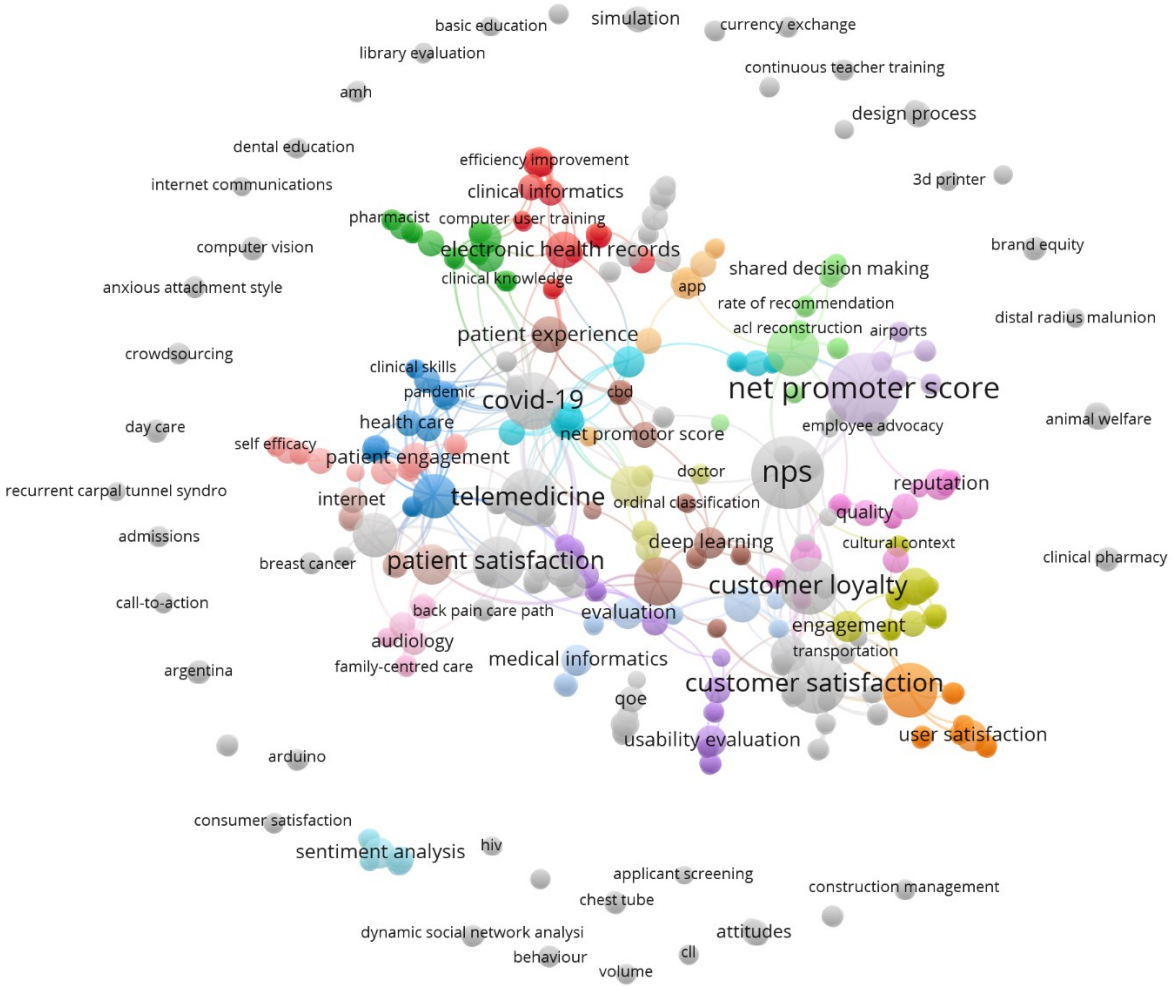

Figure 4. Network View of Co-Occurrence of Terms
Source: Research data.

The score pertaining to each keyword, representing the average year of publication, provides an interesting perspective on the temporal trend and underlines the currency or novelty of different research topics within the corpus. "Digital health" has the highest score of 2022.3333, reflecting its status as the most contemporary keyword within the corpus. This illustrates the escalating relevance of the digital health domain in recent years, possibly accelerated by the demands of the COVID-19

pandemic. Not far behind are "evaluation" and "sentiment analysis" with scores of 2021.6667, illustrating the growing significance of evaluative methods and sentiment analysis.

The keywords "mHealth" and "burnout" share a score of 2020.6667 and 2020.8333 respectively, representing another layer of recent thematic focus. mHealth, or mobile health, points to the rise of mobile technology in healthcare, whereas "burnout" possibly highlights the increasing awareness of mental health issues within the healthcare sector and the role of NPS in assessing related factors.

In the middle of the pack, keywords such as "loyalty," "mobile applications," "usability evaluation," and "user satisfaction" demonstrate scores around 2019.6667, highlighting the sustained focus on these themes in the more recent literature, underlining the emphasis on the end-user experience applications. Meanwhile, the prominence of "machine learning" with a score of 2019.5714 suggests a growing trend of applying advanced analytics and predictive models in interpreting NPS data. The keyword "medical informatics" with a score of 2018.6667 further emphasizes the integration of informatics in research, reflecting the increasingly data-driven nature of the healthcare sector.

Keywords with the lowest scores - "telehealth," "decision support," "electronic health record," and "questionnaire" - still present scores above 2020. These themes suggest that NPS research continues to explore diverse areas, including telehealth services, decision-support tools, EHR systems, and traditional survey methods.

The strong inclination towards digital health themes aligns with the global healthcare shift towards digitalization, while the presence of themes like burnout indicates a growing consciousness towards healthcare provider wellbeing. The spectrum of themes showcases the broad application in diverse areas of healthcare and health informatics.

The citation analysis of the corpus offers an indication of the influence and impact of the studies contained within it, as shown on figure 5. The selected corpus generated a total of 3802 citations and achieved an h-index of 30. The h-index indicates that 30 publications have each been cited at least 30 times, reflecting the corpus' robust impact within the academic community. The data suggests an accelerating citation trend, with citation count increasing annually from 203 in 2018 to 453 in 2023. This may reflect a growing scholarly interest in the topic of Net Promoter Score and associated themes within healthcare, which is potentially underlined by the contemporary issues in health care provision and management.

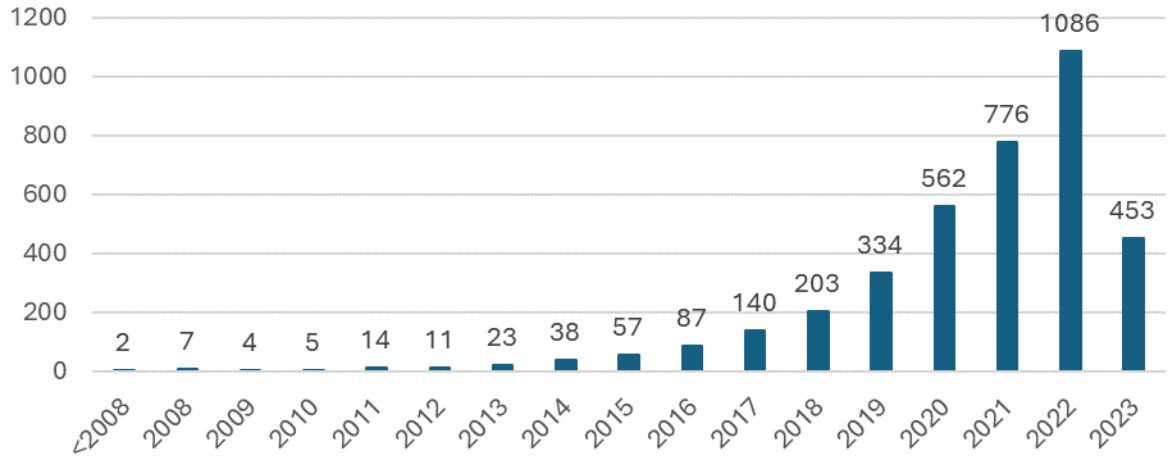

Figure 5. Number of Citations per Year
Source: Research data.

Observing the most cited publications within the corpus, as shown on table 4, the leading article accrued 119 citations over the last five years. The two most heavily cited publications garnered

78 and 73 citations respectively. None of these three top articles recorded citations before 2020, suggesting that they are likely to have been published in the same year or a year before, indicating a robust reception in the academic community given the relatively short timescale.

Of note is the marked increase in citations from 2022 for the articles that previously had negligible citations. The fourth and fifth most cited articles saw their citations rise from zero in 2021 to 27 and 20 respectively in 2023. This pattern may reflect the typical "citation lag," whereby it often takes a couple of years before a publication's citation count begins to rise substantially. This is because it takes time for other researchers to digest new findings and incorporate them into their work.

Table 4
20 Most Cited Publications

Year	*Document Title*	*Authors*
2014	Assessing treatment outcomes using a single question: The Net Promoter Score	Hamilton et. al
2015	The Net Promoter Score - an asset to patient experience surveys?	Krol M.W. et. al
2015	The predictive ability of different customer feedback metrics for retention	de Haan E. et. al
2021	Multiclass Confusion Matrix Reduction Method and Its Application on Net Promoter Score Classification Problem	Markoulidakis I. et. al
2019	Good and bad market research: A critical review of Net Promoter Score	Fisher N.I., Kordupleski R.E.
2016	An online self-care education program to support patients after total laryngectomy: feasibility and satisfaction	Cnossen I.C. et. al
2016	Retrospective: why do customers switch? The dynamics of satisfaction versus loyalty	Mittal B.
2013	Community pharmacists' occupational satisfaction and stress: A profession in jeopardy?	Munger M.A. et. al
2017	NPS and Online WOM: Investigating the Relationship Between Customers' Promoter Scores and eWOM Behavior	Raassens N., Haans H.
2017	Customer Experience, Net Emotional Value and Net Promoter Score on muslim middle class women in Medan	Situmorang S.H., Rini E.S., Muda I.
2018	Students' emotional engagement, motivation and behaviour over the life of an online course: Reflections on two market research case studies	Hewson E.R.F.
2019	The Net Promoter Scores with Friends and Family Test after four hand surgery procedures	Stirling P. et. al
2017	Pre-testing of Polish Translation of System Usability Scale (SUS)	Borkowska A., Jach K.
2014	Is the NPS a trustworthy performance measure?	Kristensen K., Eskildsen J.
2018	Implementation and unification of the ERP system in a global company as a strategic decision for sustainable entrepreneurship	Pohludka M., Stverkova H., Slusarczyk B.
2021	Measuring performance during crises and beyond: The Performance Promoter Score	Aguinis H., Burgi-Tian J.
2019	Measuring the patient experience in community mental health services for older people: A study of the Net Promoter Score using the Friends and Family Test in England	Wilberforce M., Poll S., Langham H., Worden A., Challis D.
2018	[The net promoter score (NPS) for insight into client experiences in sexual and reproductive health clinics, El Índice de Promotor Neto (IPN) para generar conocimiento sobre las experiencias de clientes en clínicas de salud sexual y reproductiva]	Koladycz R., Fernandez G., Gray K., Marriott H.
2018	Assessing the Outcome of Hip Arthroscopy for Labral Tears in Femoroacetabular Impingement Using the Minimum Dataset of the British Non-arthroplasty Hip Register: A Single-Surgeon Experience	Maempel J.F., Ting J.Z., Gaston P.
2022	The use of Net Promoter Score (NPS) to predict sales growth: insights from an empirical investigation	Baehre S. et. al

Source: Research data.

Despite the high citation counts for some articles, others in the top 20 most cited list have more modest citation numbers, ranging from 21 to 36. This disparity is possibly influenced by factors such as the age of the article, the prominence of the authors, the journal's impact factor, and the relevance of the research topic to the broader academic community. Nevertheless, the presence of these articles in the top-cited list underscores the broad interest in various facets of the NPS theme, from patient satisfaction to mobile health and digital health transformations.

CONCLUSIONS

This bibliometric review has provided a comprehensive overview of the academic discourse surrounding the Net Promoter Score and by a thorough examination of a significant corpus of literature across two major databases, has illuminated the evolution, geographical distribution, key authors, and the central themes.

The chronological development of the publications revealed a growing interest, with a notable surge in the past five years, indicating its relevance and appeal in both academic and business settings (Reichheld, 2003). In geographical terms, a distinct concentration of research output was observed in the United States, which is unsurprising given it was originated in this country. However, it's also essential to consider the emerging contributions from countries like Australia, the United Kingdom, and Spain, showing the growing global attention to this metric.

Through the analysis of co-authorship networks, the research has shed light on the collaborative dynamics within the academic community. The network visualization pointed towards a moderately collaborative research environment. This finding underlines the significance of collaborative efforts in advancing the discourse, as collaboration is known to enhance the breadth and depth of scholarly insights (Bozeman & Boardman, 2014).

The co-occurrence analysis of keywords elucidated the main themes in literature, and the dominant themes revolved around 'customer satisfaction,' 'customer loyalty,' and 'customer retention,' underscoring the integral role in customer relationship management. Such findings align with Reichheld's (2003) initial proposition of NPS as a robust predictor of company growth.

The research further indicated a predominance of articles in the publication type, followed by conference papers. This aspect suggests a dynamic interplay between the fast-paced dissemination of findings in conferences and the rigorous validation process associated with journal publications (Tahai & Meyer, 1999).

As for the subjects of publications, an intersection of various fields was noticeable, with Business, Management and Accounting, and Computer Science standing out. This interdisciplinary orientation reflects the widespread application of NPS across different sectors and its relevance in the era of data-driven decision-making (Mariscal et al., 2010).

Future research could extend this investigation by examining the thematic evolution over time or by focusing on specific sectors, geographical regions or other relevant scientific databases of publications not indexed on Web of Science nor Scopus. Furthermore, a deeper investigation of the relationship between the NPS and other customer-centric metrics could provide valuable insights into the broader field of customer relationship management.

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