Articles

Emerging trends in the literature on psychological and job performance: a bibliometric analysis

Tendencias emergentes en la literatura sobre el psicológico y el desempeño laboral: un análisis bibliométrico

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ABSTRACT

The Psychological Contract is a set of beliefs and expectations, based on explicit or implicit promises, that a person exchanges with the organization. The development, evolution and application of this construct in the Human Resources area were described. A bibliometric and network analysis of the records of the Web of Science database from 1984 to September 2023 was carried out. The results show the evolution through time, identifying three lines or streams of work. The dimensions related to health, stress and depression show a high interest for future lines of research; however, the performance and impact of psychological models on work performance show a high density or degree of development, with a relatively low level of relevance. Finally, the contributions and limitations for future research are presented .

Keywords: psychological contract, job performance, bibliometric analysis; scientific mapping.

RESUMEN

El Contrato Psicológico es un conjunto de creencias y expectativas, basadas en promesas explicitas o implícitas, que intercambia una persona con la organización. Se describir el desarrollo, evolución y aplicación de este constructo en el área de los Recursos Humanos. Se realizó un análisis bibliométrico y de redes de los registros de la base Web of Science desde 1984 hasta Septiembre del 2023. Los resultados muestran la evolución al través del identificando tres líneas o corrientes de trabajo. Las

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dimensiones relacionadas a la salud, stress y depresión evidencian un alto interés para futuras líneas de investigación sin embargo los rendimiento e impacto de modelos del Psicológico sobre el Desempeño laboral, evidencian alta densidad o grado de desarrollo, con un nivel de relevancia relativamente bajo. Finalmente se presentan las contribuciones y limitaciones para futuras investigaciones.
Palabras clave: contrato psicológico, rendimiento laboral, análisis bibliométrico; cartografía científica.

INTRODUCTION

The current economic model system is imposing new challenges for organizations to innovate and implement strategies from within; in an environment of globalization that they face, contributing to the change and evolution of the traditional company-employee/worker relationship, and it is in this context where the Psychological, is estimated as a determinant factor of behavior within organizations (Tena, 2002; Topa et al., 2022). As knowledge and scientific production on a given topic has been increasing, researchers and librarians find it more complex and difficult to grasp the overall picture of a field of science (Arruda et al., 2022), this paper aims to determine the emerging trends in the literature on psychology and job performance through a Bibliometric analysis.

In a first exploratory attempt to consult in Google Scholar or Google Schollar the keyword "Psychological" reported about 10,700 results and when related to the word "performance", it reported 4,990 results, and when expanding performance as work performance, 2,160 results were reported, most of them published as books or journals that do not appear in Scopus or WoS quartiles.

Due to the priority it has become for companies and the academic community, this paper aims to contribute to the general knowledge of psychology and its impact on work performance, specifically by addressing the following questions: which are the most influential authors, papers, journals, institutions and countries in the literature; what is the structure of knowledge in this area; and what directions is research on the subject taking? So far, no research has been identified that addresses and answers these questions.

In order to fill the gap detected and to address the above research questions, a detailed bibliometric analysis of studies related to the Psychological Contract and job performance, registered in Web of Science, was carried out. This article is the first to undertake a scientific mapping of the Psychological Contract and its impact on work performance activity and presents a holistic view of this topic by exploring the evolution of the field. To meet this objective, network analysis techniques and tools such as R

studio, Bibliometrix, Litmaps and VOsViewer were used to visualize the trends and behavior of the scientific production registered so far.

The term psychological contract emerged in the 1950s in order to prevail the informality of agreed relationships between employers and their employees (Shalk & Roe, 2007). Psychological contracts are mental models or schemas that govern how employees understand their exchange relationships with their employers. Psychological contract breach generates feelings of violation and can occur even when employees' economic contracts are fulfilled (Gallani et al., 2019).

The psychological contract does not have a single origin or source, but is established and is sensitive to multiple elements, such as co-workers, the work team, the direct supervisor, or managers and directors who may make decisions about working conditions (Becker, 2003).

The main difference between the two forms of contracts, written and unwritten, derives from the relationships between organizations and their members. Psychological contracts, on the one hand, as individual beliefs are considered a reciprocal obligation between the individual and the organization on the other hand implicit contracts are mutual obligations that characterize existing interactions at the level of the relationship (Rousseau, 1989).

Psychological contract violation refers to the feelings of anger and betrayal often experienced when an employee believes that the organization has failed to fulfill one or more of these obligations (Morrison & Robinson, 1997). The impact of violations is examined using both quantitative and qualitative methods (Morrison & Robinson, 1997). While it is true some studies conducted their results indicate, that there is a significant and positive correlation between the psychological contract, performance and satisfaction. (Loli, et al., 2017), other works consider that relationship the breach of the psychological contract to the level of trust of employees with respect to their organization, is strong and multifaceted (Robinson et al., 2012).

In addition, trust (along with unmet expectations) may mediate the relationship between psychological contract breach and employees' subsequent contributions to the firm. Initial trust in the employer at the time of hire may also moderate the relationship between psychological contract breach and subsequent trust such that those with high initial trust experienced less of a decline in trust (Robinson et al., 2012).

A psychological contract breach is a subjective experience referring to the perception of one party that the other party has adequately failed to fulfill its obligations and promises (Topa et al., 2022). Usually a determinant for psychological contract breach in the relational dimensional between trust and the degree of employee commitment, as well as the transactional dimension is the fulfillment of the compensation expected by the employee (Bunderson , 2011).

The number of academic publications is increasing at a dizzying pace and it is becoming increasingly unfeasible to keep up with everything that is published. In addition, the emphasis on empirical contributions has resulted in voluminous and fragmented research

streams (Briner and Denyer, 2012). This hinders the ability to accumulate knowledge and actively gather evidence across a body of previous research work.

The changing nature of labor relations and of the labor force itself is a good argument in favor of the need to explain the meaning and functioning of the psychological and social relations and contracts implicit in work (Rousseau, 1989). Unfortunately, after several decades of use in organizational science, these concepts have been vaguely defined and virtually unstudied.

Bibliometrics, as a discipline, has since its inception two major areas of development and application; on the one hand, the response to the study of science and the evolution of scientific production and, on the other hand, editorial management. This discipline empirically studies the scientific activity generated by authors and collaborative groups, through the final product of research, the scientific article.(Juárez et al ., 2016).

The use of bibliometrics is gradually spreading to all disciplines. It is particularly suitable for scientific mapping at a time when the emphasis on empirical contributions is generating voluminous, fragmented and controversial research streams (Corrado, 2017) . Scientific mapping is complex and unwieldy because it consists of several steps and often requires numerous and diverse software tools, not all of which are necessarily free (Corrado, 2017).

Although automated workflows are emerging that integrate these software tools into an organized data flow, in this article we propose a unique open source tool, designed by the authors, called bibliometrix, to perform comprehensive scientific mapping analyses. bibliometrix supports a recommended workflow for performing bibliometric analyses. As it is programmed in R, the proposed tool is flexible and can be quickly upgraded and integrated with other statistical R packages (Corrado, 2017).

MATERIALS AND METHODS

The present research is of a descriptive conclusive type because it focuses on studying the development of the literature related to the Psychological Contract and its impact on work performance. A review of the research was carried out using bibliometric techniques. These techniques have been a contribution to the scientific community and have served as reference information for researchers.

Data Sources

The scientific articles were extracted from WOS, due to its wide recognition and scope, and also because it is among the world leaders (Zhu and Liu, 2020). The criteria used for the search are listed in Table 1.

Table 1. *Attributes considered for analysis*

Analysis attribute	Database: Web of Science
Space of Time	1984-2023
Consultation Period	September 08-2023
Type of Documents	Scientific articles,
Type of Journals-Areas	Social Sciences, Economics, Econometrics and Finance, Business, Management and Accounting, Decision Sciences
Search field	ALL FIELDS (%PSYCHOLOGICAL CONTRACT%) AND (performance) https://www.webofscience.com/wos/woscc/summary/79d98da1-7199-4012-88d8-cb87344d11e4-a6e21ec1/relevance/1
Results Data1/Data2/Data 3	282

To generate data, all fields (topic, theme, keywords, abstract, etc.) were searched in a single query. This allows you to easily find search terms in any field.

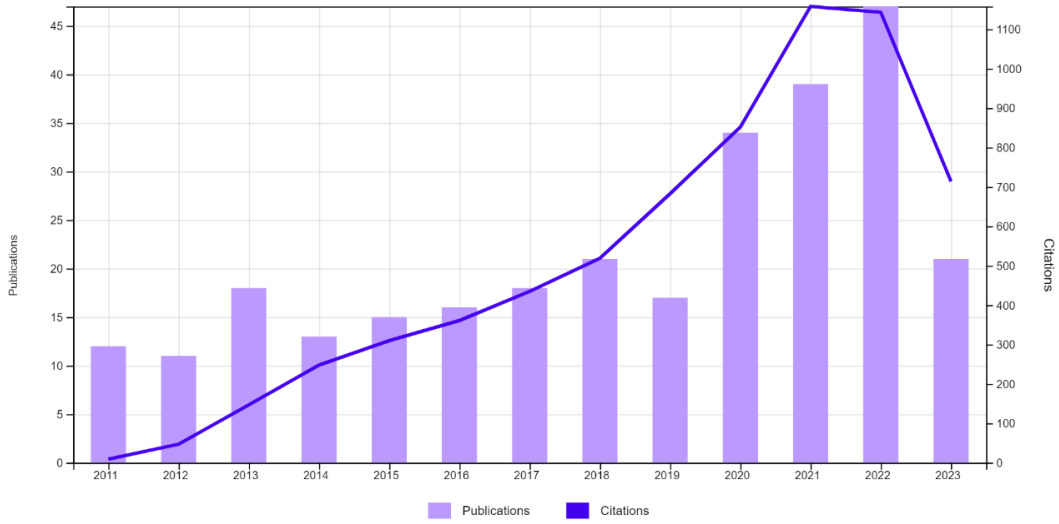
a) An annual growth rate of 9.33 % was observed.

b) It was observed that 76% of the works developed correspond to the areas of psychology/psychiatry, occupational health/industrial engineering and administration, distributed as follows: 32.43% psychology and psychiatry, 31.24% in the area of occupational health/industrial engineering and 12.22% in the area of administration. Administrative. The rest, i.e., 24% , grouped to 51 remaining WOS categories.

c) It was observed that 1520, researchers authors have dealt with this subject, however, only 11 works were documented by a single author.

d) Figure 1 shows the relationship between publications and citations, by year, it is observed that over time the variability between these two indicators has remained proportional, however, in 2020 and 2022, a very significant variability is observed.

Figure 1. Chronological publications compared to subject citations.

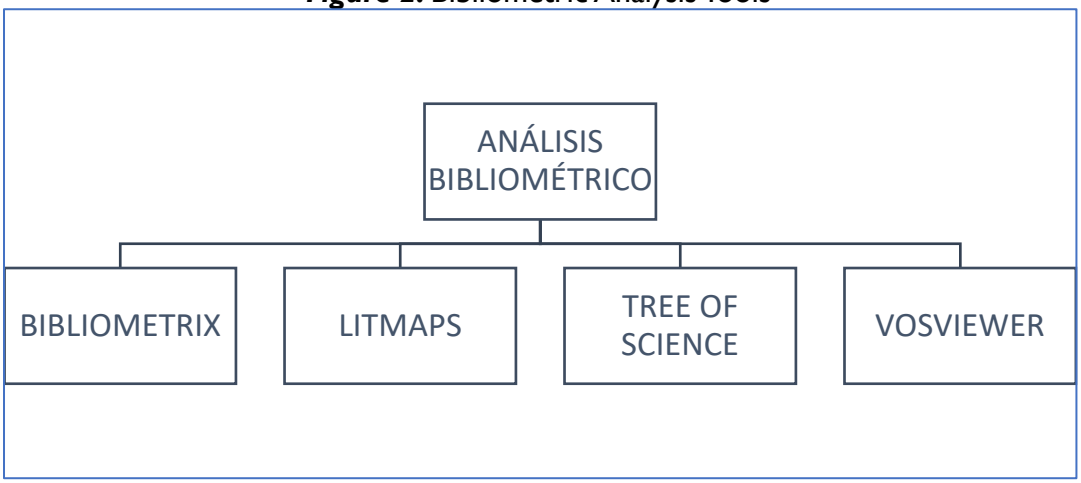


The collection of the seed for the bibliometric analysis was done by filtering the search only by the areas related to the line of research, the results were more consistent and with less disturbance or dispersion, due to the omission of terms or words that are not related to the area of knowledge, which facilitated the purification and qualitative analysis. For the bibliometric analysis of this information, a quantitative approach was used (Zupic and Čater, 2015), which allows providing rigor, objectivity and decreasing researcher bias; moreover, it is aligned with previous research in the area of management (Ye, Kueh, Hou, Liu, & Yu, 2020; Vallaster, Kraus, Merigó, & Nielsen, 2019; Diez-Vial & Montoro-Sanchez, 2017).

Analysis tools

Open access bibliometric tools were used for the bibliometric analysis, as shown in Figure 2.

Figure 2. Bibliometric Analysis Tools



According to Aria and Cuccurullo (2017), the use of Bibliometrix is recommended, mainly because it is open source, and it is a tool developed in R, very frequently used in the literature to perform scientific mapping (Di Vaio et al., 2021; Duque, Samboni, et al., 2020; Duque, Trejos, et al., 2021; Landinez et al., 2019; Queiroz & Fosso Wamba, 2021; Secinaro et al., 2021; Tani et al., 2018). This tool is compatible with different databases, in addition to having multiple analytical functions that facilitate the identification of trends.
Tree of Science (ToS) is a web tool that uses the citation network structure to identify relevant literature. ToS displays the information in the form of a tree, where the articles located at the roots are the classics, at the trunk are the structural publications, and the leaves are the most recent articles. It has been found that some results from the leaves can be separated from the subject of the tree. Therefore, the SAP algorithm is proposed to improve the results of the leaves (Valencia-Hernandez et al., 2020).
Delineating the state of the art, relationships, opportunities and key players in a given community of practitioners and scholars requires a map that connects research information, places, topics, as well as relationships between authors and institutions(Arruda et al., 2022) . In this sense VOSviewer and Litmaps were used, the former as a software tool to create and explore maps based on network data, as well as co-authorship, co-occurrence, citation, bibliographic coupling and co-citation links and Litmaps was used to generate a map of the most relevant articles related to their seed article and to complement the results co-citation mapping was performed, a social network analysis, this approach allows visualizing the entire network of current knowledge, regarding the impact of the Psychological Contract on job performance.

RESULTS

The word cloud (also called tag cloud) is a type of visualization that highlights the most important words and phrases. Figure 2 shows that the word ***performance*** is the most frequent word in the bibliometric analysis of the data.

Figure 3. *Word Cloud*

Most relevant reviews

It is observed that the most relevant reviews or productions are found in journals related to health development and medicine with H-INDEX OF 8 AND 7 such as INTERNATIONAL JOURNAL OF AND PUBLIC HEALTH ENVIRONMENTAL RESEARCH (293) and PSYCHOLOGICAL MEDICINE(186) respectively , and HUMAN BRAIN MAPPING (140) , but with H-idex of 3 , as well as until 2011 MANAGEMENT SCIENCE (136) as summarized in Figure 3 and Table 2.

Figure 4. Most relevant reviews

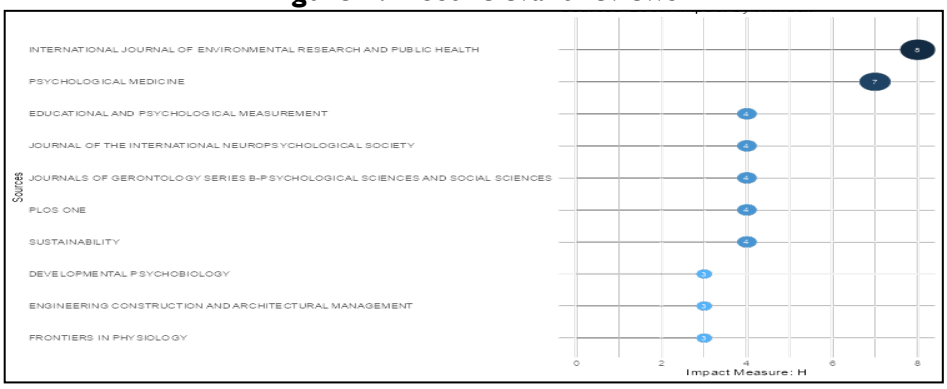


Table 2 . *Most relevant reviews*

Element	H_Index	G_Index	M_Index	TC	NP	PY_Start
INTERNATIONAL JOURNAL OF ENVIRONMENTAL RESEARCH AND PUBLIC HEALTH	8	17	1	293	17	2016
PSYCHOLOGICAL MEDICINE	7	13	0,63636364	186	18	2013
EDUCATIONAL AND PSYCHOLOGICAL MEASUREMENT	4	4	0,33333333	44	4	2012
JOURNAL OF THE INTERNATIONAL NEUROPSYCHOLOGICAL SOCIETY	4	6	0,33333333	100	6	2012
JOURNALS OF GERONTOLOGY SERIES B-PSYCHOLOGICAL SCIENCES AND SOCIAL SCIENCES	4	4	0,33333333	52	4	2012
PLOS ONE	4	5	0,4	131	5	2014
SUSTAINABILITY	4	9	0,66666667	93	11	2018
DEVELOPMENTAL PSYCHOBIOLOGY	3	3	0,23076923	86	3	2011
ENGINEERING CONSTRUCTION AND ARCHITECTURAL MANAGEMENT	3	5	0,6	28	5	2019
FRONTIERS IN PHYSIOLOGY	3	3	0,375	104	3	2016
HUMAN BRAIN MAPPING	3	4	0,25	140	4	2012
JOURNAL OF OPERATIONS MANAGEMENT	3	3	1,5	12	3	2022
MANAGEMENT SCIENCE	3	3	0,23076923	136	3	2011

MILITARY MEDICINE	3	4	0,23076923	17	4	2011
AMERICAN JOURNAL OF PRIMATOLOGY	2	2	0,18181818	32	2	2013
APPLIED SCIENCES-BASEL	2	2	0,5	17	2	2020
BMC HEALTH SERVICES RESEARCH	2	3	0,2	20	3	2014
CLINICAL SIMULATION IN NURSING	2	2	0,28571429	68	2	2017
COMPUTERS \& EDUCATION	2	2	0,33333333	148	2	2018
CONTEMPORARY CLINICAL TRIALS	2	2	0,18181818	85	2	2013
ENERGIES	2	2	0,33333333	33	2	2018

Most relevant authors

To identify the most influential authors on a specific topic, the author-citation network helps to identify the researchers who stand out most within the network, based on the number of times they have been referenced (White, 2003). Table 4 summarizes the number of publications in descending order

Table 3. *Most relevant authors*

Author	Articles	Fractional items
VIETA E	6	0,488585434
WANG X	6	1,010144928
KUEBLER A	4	1,15
LIU Y	4	0,510516934
POMAROL-CLOTET E	4	0,373809524
RADUA J	4	0,329761905
AMORETTI S	3	0,18977591
FUENTES-CLARAMONTE P	3	0,27202381
GEMMEL P	3	1
HARRIS TB	3	0,210516934
KIM J	3	0,833333333
LI H	3	0,658333333
LI J	3	0,833333333
LIU X	3	0,384387352
NEWAZ MT	3	0,7
RODWELL J	3	1,166666667

SALGADO-PINEDA P	3	0,210119048
SALVADOR R	3	0,245833333
TORRENT C	3	0,177871148
TRYBOU J	3	1
ZHANG C	3	1,033333333
ZHANG Q	3	0,467720685

VIETA(6), WANG X(6), KUEBLER(4) who are among those with the highest production of articles in this area of knowledge, however, of the three the most cited by other authors is KUEBLER, according to Figure 4, probably due to the fact that KUEBLER, his scientific production regarding the thematic started two years in 2016, that VIETA AND WANG that his first works are documented from 2018. In general, it is observed that most of the authors have an h_index below 4 in the thematic area analyzed, as shown in Table 4.

Table 4. *Impact Index*

Element	h_index	g_index	m_index	TC	NP	PY_start
KUEBLER A	4	4	0,4	105	4	2014
VIETA E	4	6	0,5	58	6	2016
GEMMEL P	3	3	0,3	23	3	2014
HARRIS TB	3	3	0,3	143	3	2014
NEWAZ MT	3	3	0,6	19	3	2019
POMAROL-CLOTET E	3	4	0,33333333	44	4	2015
TRYBOU J	3	3	0,3	23	3	2014
WANG X	3	6	0,375	51	6	2016
ZHANG Q	3	3	0,3	135	3	2014
AMANN BL	2	2	0,25	36	2	2016
AMORETTI S	2	3	1	16	3	2022
ANNEMANS L	2	2	0,2	20	2	2014
ARBEL Y	2	2	0,15384615	26	2	2011
BLANKERTZ B	2	2	0,2	83	2	2014
BOOTH BM	2	2	0,5	23	2	2020
BOTREL L	2	2	0,25	49	2	2016
BRINKMANN K	2	2	0,18181818	55	2	2013
CARDONER N	2	2	0,18181818	52	2	2013
CARLSON MC	2	2	0,18181818	82	2	2013
CHARLESWORTH MJ	2	2	0,15384615	68	2	2011

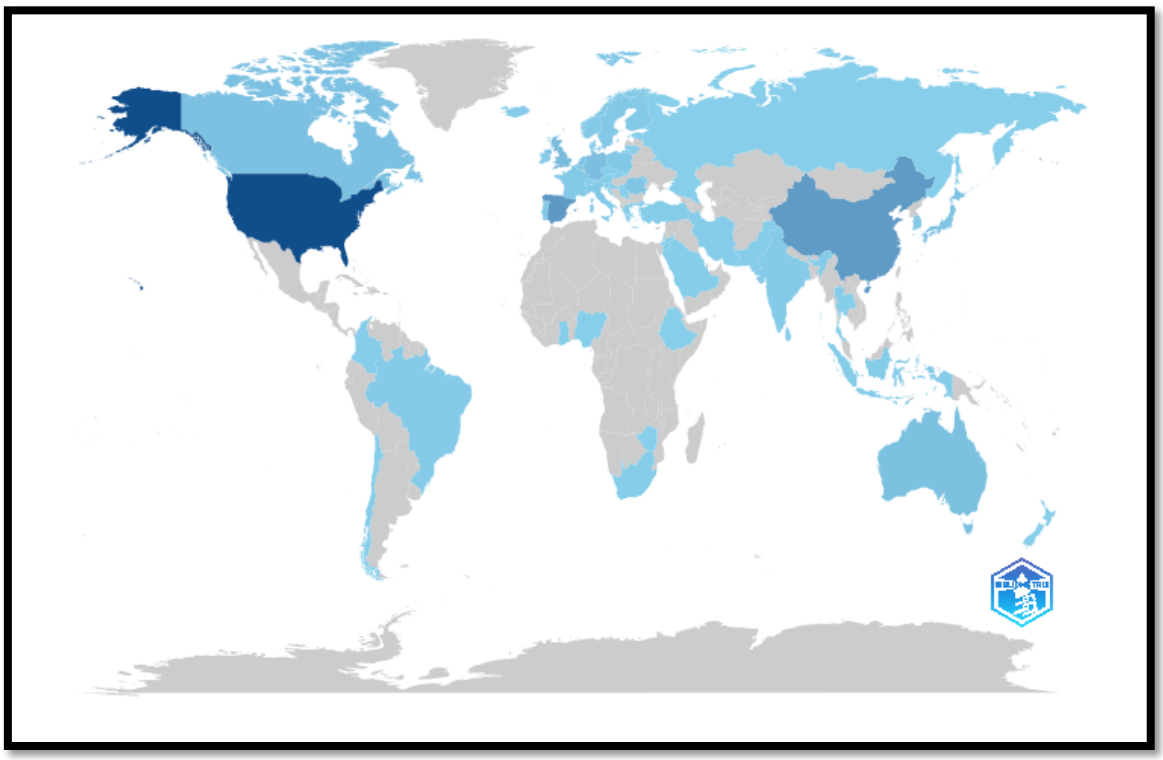
CLARK GA	2	2	0,5	44	2	2020
COSTA PS	2	2	0,18181818	67	2	2013
DAVIS TS	2	2	0,5	44	2	2020
DEBEVEC T	2	2	0,28571429	28	2	2017
DREYER RP	2	2	0,28571429	41	2	2017

Most relevant institutions
Most relevant affiliations
Table 6. Shows that the affiliations with the highest scientific production are the University of Barcelona(23). They are the University of Barcelona (23). Tohoku University (20), University of Pittsburgh (17), University of Illinois (16), Harvard University (13), Kings College London (13) in that order, and the rest with scientific production of less than 12 articles.

Table 5. *Most relevant affiliations*

Affiliation	Articles
UNIV BARCELONA	23
TOHOKU UNIV	20
UNIV PITTSBURGH	17
NORTHWESTERN UNIV	16
UNIV ILLINOIS	14
HARVARD UNIV	13
KINGS COLL LONDON	13
COLUMBIA UNIV	12
ALEXANDRU IOAN CUZA UNIV.	11
UNIV CALIF LOS ANGELES	11

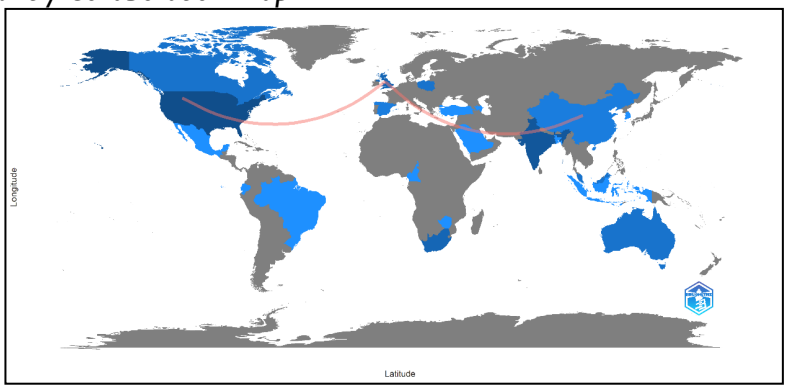
Figure 2. *Scientific production by* country



Co-authorship of articles published in journals provides useful information on collaborative structures in the scientific community, which form "collaborative networks" in which the nodes represent authors who are connected by a line if they have jointly signed one or more papers. From the collaboration between authors or institutions emerges a relational structure that can help us to understand, manage and predict the results of the scientific production generated by groups of co-authors (de Granda-Orive et al., 2009).

Figure 4, generated from R's Bibliométrix, shows that, in the area or topic of Psychological Contract and Work Performance, there is academic collaboration between China and England and the United Kingdom and the United States for the development of scientific production in this area of research.

Figure 3. *Country Collaboration Map*

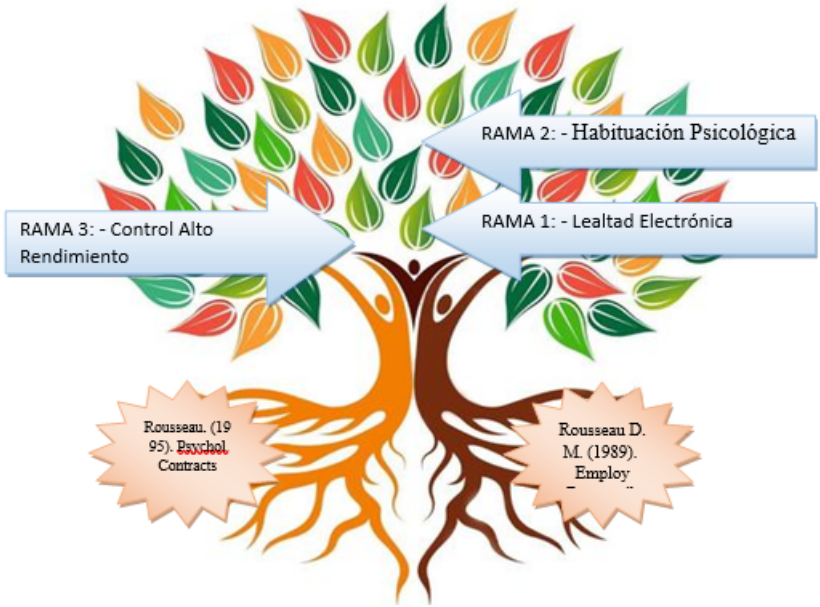


DISCUSSION

Tree of Science

Tree of Science (ToS) is an integrated web platform for a comprehensive analysis of scientific literature. ToS is designed to facilitate the search for relevant literature. Based on graph theory metrics, this tool visualizes the works in a field of knowledge as a tree where the roots are the classic articles, the trunk represents those articles that allow the area to grow and the leaves are the recently published articles (Zuluaga et al., 2022).

Figure No. 1. Science Tree - Psychological and Performance



The Roots

They are represented by the fundamental articles of the original articles on the subject of Psychological and performance, the following table represents chronologically the main epistemological roots of knowledge in this area, and mainly highlight mainly the

work done by Rousseau since 1989, as well as the work of Robbisson in 1996 and in 2000, as shown in Table 7.

Table 6. *Roots : Electronic Loyalty*

1. Rousseau (1995). Psychol Contracts Or.
2. Rousseau D. M. (1989). Employ Responsib Rig, 2, 121. [10.1007/BF01384942, DOI 10.1007/BF01384942]
3. FORNELL C. (1981). J Marketing Res, 18, 39. 10.2307/3151312.
4. Morrison EW (1997). Acad Manage Rev, 22, 226. 10.5465/AMR.1997.9707180265.
5. Robinson SL (1996). Admin Sci Quart, 41, 574. 10.2307/2393868.
6. Blau P. (1964). Exchange Power Soc.
7. Robinson SL (2000). J Organ Behav, 21, 525. 10.1002/1099-1379(200008)21:5<525::AID-JOB40>3.0.CO;2-T.
8. [Anonymous] (2012). Ibm Spss Stat Wind V.
9. ROBINSON SL (1994). J Organ Behav, 15, 245. 10.1002/job.4030150306.
10. Podsakoff PM (2003). J Appl Psychol, 88, 879. 10.1037/0021-9010.88.5.879.
11. [Anonymous] (2007). What Were They Think.
12. [Anonymous] (2005). Cartogr Geogr Inf Sc. [DOI 10.1559/152304005775194773, 10.1559/15230400577519477 3].

Figure 9 shows the list of the works carried out by Rosseu, where they served as semifinal articles for other research works related to the subject of Psychology.

Figure 2. Psychological and implied contracts in organizations. Rousseau, 1989

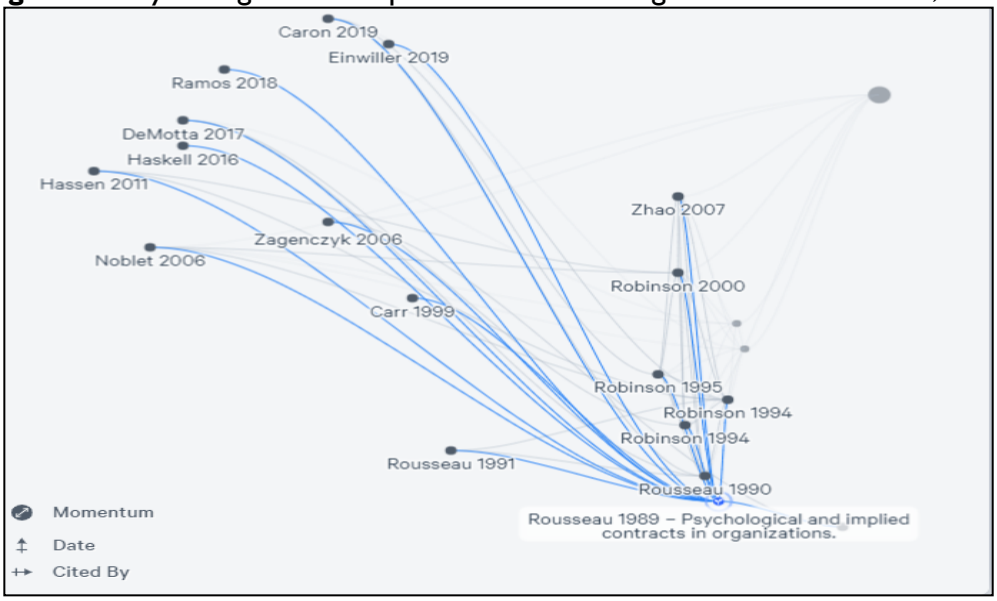
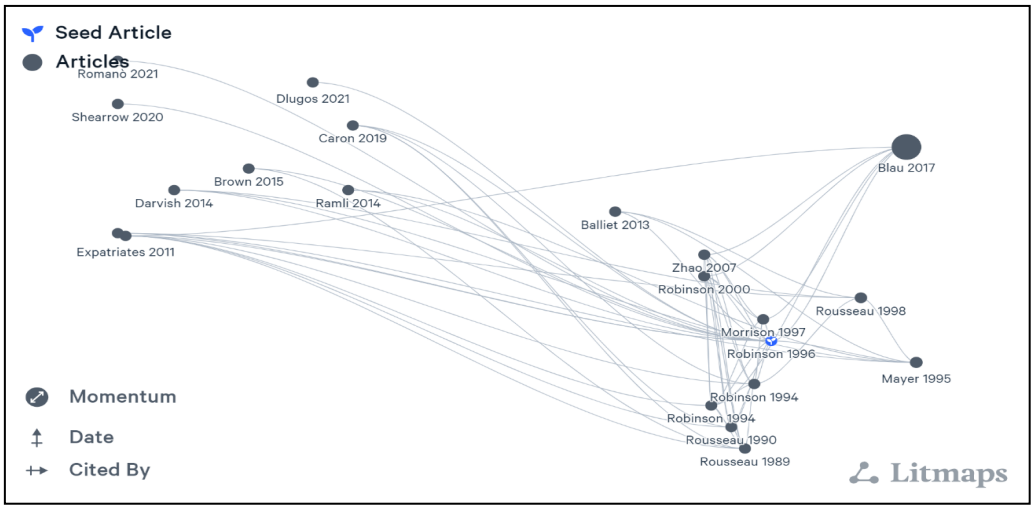


FIGURE 3. *Relationship Trust and Breach of the Psychological Contract (Robinson,1996).*



The Log

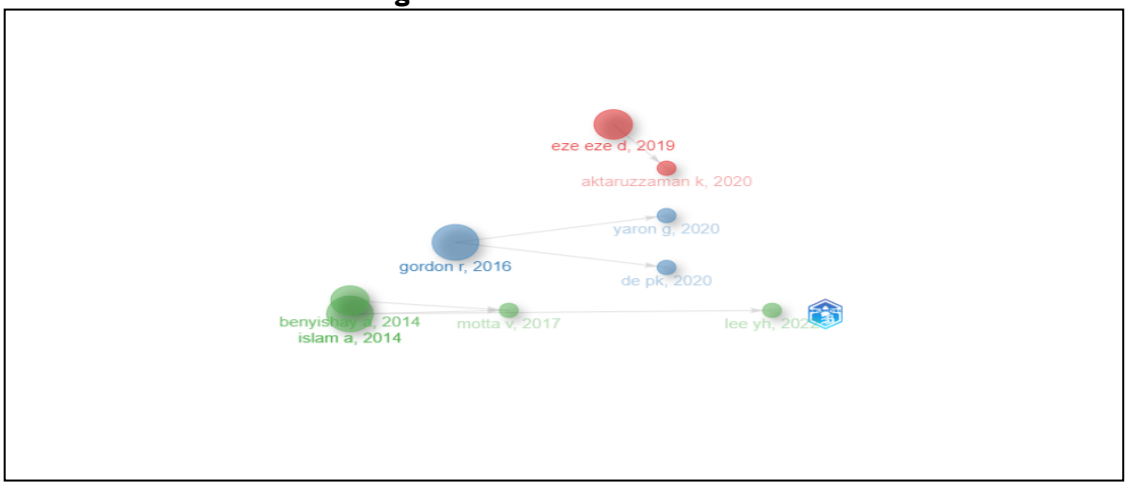
It is where you should find articles where the topic of interest has a structure, these should be the first authors to discover the applicability of the topic of interest.

The Branches

Branches represent specific sub-areas within a knowledge domain and encapsulate articles focused on different topics derived from cluster analysis. In addition, branches also indicate trending topics within that particular area.

3.5 Seminal Documents

Figure 4. Seminal Documents



It is observed that the work of Rosseau (1989), along with the work of Robisson (1996), are cited by Zaho (2017) and then this is cited by Cereson and Douglas more recently, no document was found with this bibliometric analysis that tries to explain in phenomenon among the variables of interest, however an important influence of these

authors in later works is observed, Table 7, shows by the order of importance and references to them, the articles considered as the most important seeds.

Table 7 *Seminal Articles*

Seminal Articles	
Denise M. Rousseau,1997)	Psychological and Implied Contracts in Organizations. Employee Responsibilities and Rights Journal
(Morrison & Robinson, 1997)	WHEN EMPLOYEES FEEL BETRAYED: A MODEL OF HOW PSYCHOLOGICAL CONTRACT VIOLATION DEVELOPSMorrison E, Robinson S(1997) 226-256.
(Robinson et al., 2012)	Trust and Breach of the Psychological Contract

Branches represent specific sub-areas within a domain of knowledge and encapsulate articles focused on different topics derived from cluster analysis. In addition, the branches also indicate the trending topics within that particular area, in this sense the bibliometric analysis identifies three branches that group these trends, two of them mainly related to the area of medicine and health.

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Branch 1: Clouster or keyword-associated branches - E-loyalty

Table 8. *Cluster 1: Electronic Loyalty*

1. Pavlou PA (2005). *Inform Syst Res, 16*, 372. 10.1287/isre.1050.0065.
2. [Anonymous] (2018). *The Guardian*.
3. National Institutes of Health (2014). *Iran J Publ Hlth*.
4. Thomas J. (2010). *Er 4 Flyer 2014 V7pd*.
5. Ozturk AB (2017). *Inform Syst Front, 19*, 753. 10.1007/s10796-017-9736-4.
6. De Vos A. (2011). *J Vocat Behav, 79*, 438. 10.1016/j.jvb.2011.05.010.
7. Brennan S. (2017). *Global Evidence Summ*.
8. Liu Y. (2015). *J Serv Res-us, 18*, 451. 10.1177/1094670515584331.
9. Walsh G. (2008). *Eur J Marketing, 42*, 977. 10.1108/03090560810891109.
10. Michels, N. (2018). **Psychosocial stress and inflammation driving tryptophan breakdown in children and adolescents: A cross-sectional analysis of two cohorts** *Psychoneuroendocrine, 94*, 104. 10.1016/j.psyneuen.2018.05.013.
11. Khouja, C. (2022). **Consumption and effects of caffeinated energy drinks in young people: an overview of systematic reviews and secondary analysis of UK data to inform policy** *Bmj Open, 12*(2). 10.1136/bmjopen-2020-047746
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15. Malhotra, N. (2021). **New Insights into e-Loyalty of Internet Banking Users in an Emerging Market Context: A Multilevel Analysis** *Inform Syst Front, 23*(6), 1521. 10.1007/s10796-020-10046-z.
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19. Zhou T. (2012). *Comput Hum Behav, 28*, 1518. 10.1016/j.chb.2012.03.021.
20. Malhotra, N. (2021). **New Insights into e-Loyalty of Internet Banking Users in an Emerging Market Context: A Multilevel Analysis** *Inform Syst Front, 23*(6), 1521. 10.1007/s10796-020-10046-z

This cloustering of research on the relationship between customer satisfaction and loyalty has advanced to a stage that requires further examination of the moderating variables, as well as developing a better understanding of the link between satisfaction and e-loyalty (Malhotra et al., 2021; Walsh et al., 2008).

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Branch 2: Clouster or Keyword-associated branches - Psychological habituation of artificial prostheses

Table 9. *Cluster 1: Psychological Habituation*

1. Wang W. (2007). *J Neurophysiol, 97*, 4258. 10.1152/jn.01180.2006.
2. George, JA (2020). **Intuitive neuromyoelectric control of a dexterous bionic arm using a modified Kalman filter** *J Neurosci Meth, 330*. 10.1016/j.jneumeth.2019.108462.
3. Tan DW (2014). *Sci Transl Med, 6*. 10.1126/scitranslmed.3008669.
4. Jiang N. (2014). *Ieee T Neur Sys Reh, 22*, 549. 10.1109/TNSRE.2013.2287383.
5. Collinger, JL. (2013). **High-performance neuroprosthetic control by an individual with tetraplegia** *Lancet, 381*(9866), 557. 10.1016/S0140-6736(12)61816-9.
6. Page, DM (2021). **Discriminability of multiple cutaneous and proprioceptive hand percepts evoked by intraneural stimulation with Utah slanted electrode arrays in human amputees** *J Neuroeng Rehabil, 18*(1). 10.1186/s12984-021-00808-4
7. Clark GA (2014). *Ieee Eng Med Bio*, 1977. 10.1109/EMBC.2014.6944001
8. Davis P (2016). *Constr Econ Build, 16*, 104. 10.5130/AJCEB.v16i3.5178.
9. George JA (2019). *Sci Robot, 4*. 10.1126/scirobotics.aax2352.
10. George JA (2018). *Ieee Eng Med Bio*, 3782. 10.1109/EMBC.2018.8513342.
11. Kluger DT (2019). *Ieee T Neur Sys Reh, 27*, 876. 10.1109/TNSRE.2019.2908817.
12. Ortiz-Catalan M. (2014). *Sci Transl Med, 6*. 10.1126/scitranslmed.3008933.
13. Raspopovic S. (2014). *Sci Transl Med, 6*. 10.1126/scitranslmed.3006820.
14. Wendelken S (2017). *J Neuroeng Rehabil, 14*. 10.1186/s12984-017-0320-4.
15. Zhong YH. (2007). *Brain Res, 1148*, 15. 10.1016/j.brainres.2007.02.024.

This cloustering brings together health-related research on the relationship between the satisfaction and loyalty of an artificial limb, or prosthesis available, should not only anatomically resemble its original counterpart, but should also function and feel the same, as they currently enable basic functions, such as the paralysis or amputation of an arm results in the loss of the ability to orient the hand and grasp, manipulate and carry objects, essential functions for activities of daily living. It is studied Brain-machine interfaces could provide a solution to restore many of these lost functions, seen as the degree of satisfaction or perception of satisfaction beyond what is expected surgically (Ortiz-Catalan et al., 2014; Page et al., 2021a).

Branch 3: Clouster or Branches associated with keywords-communication, eeg, operate, motivation, bci- High performance neuroprosthetic control.

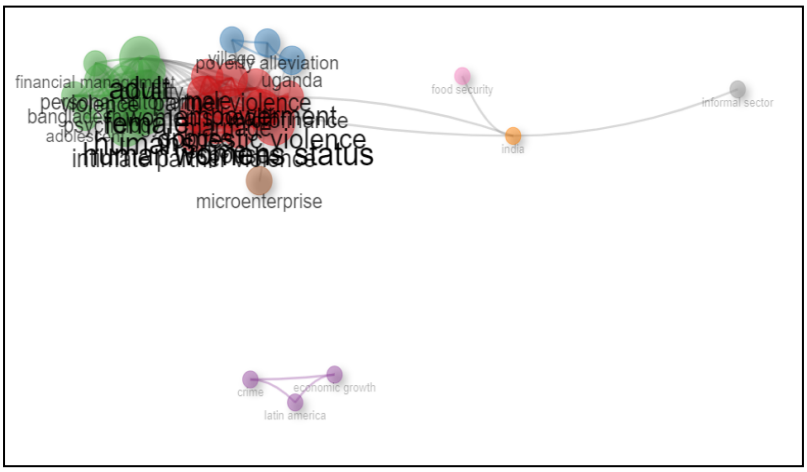
Table 10. *Cluster 1: - High performance control*

1. Wang W. (2007). *J Neurophysiol, 97*, 4258. 10.1152/jn.01180.2006.

2. George, JA (2020). **Intuitive neuromyoelectric control of a dexterous bionic arm using a modified Kalman filter** *J Neurosci Meth, 330*. 10.1016/j.jneumeth.2019.108462.
3. Tan DW (2014). *Sci Transl Med, 6*. 10.1126/scitranslmed.3008669.
4. Jiang N. (2014). *Ieee T Neur Sys Reh, 22*, 549. 10.1109/TNSRE.2013.2287383.
5. Collinger, JL. (2013). **High-performance neuroprosthetic control by an individual with tetraplegia** *Lancet, 381*(9866), 557. 10.1016/S0140-6736(12)61816-9.
6. Page, DM (2021). **Discriminability of multiple cutaneous and proprioceptive hand percepts evoked by intraneural stimulation with Utah slanted electrode arrays in human amputees** *J Neuroeng Rehabil, 18*(1). 10.1186/s12984-021-00808-4
7. Clark GA (2014). *Ieee Eng Med Bio*, 1977. 10.1109/EMBC.2014.6944001
8. Davis P (2016). *Constr Econ Build, 16*, 104. 10.5130/AJCEB.v16i3.5178.
9. George JA (2019). *Sci Robot, 4*. 10.1126/scirobotics.aax2352.
10. George JA (2018). *Ieee Eng Med Bio*, 3782. 10.1109/EMBC.2018.8513342.
11. Kluger DT (2019). *Ieee T Neur Sys Reh, 27*, 876. 10.1109/TNSRE.2019.2908817.
12. Ortiz-Catalan M. (2014). *Sci Transl Med, 6*. 10.1126/scitranslmed.3008933.
13. Raspopovic S. (2014). *Sci Transl Med, 6*. 10.1126/scitranslmed.3006820.
14. Wendelken S (2017). *J Neuroeng Rehabil, 14*. 10.1186/s12984-017-0320-4.
15. Zhong YH. (2007). *Brain Res, 1148*, 15. 10.1016/j.brainres.2007.02.024.

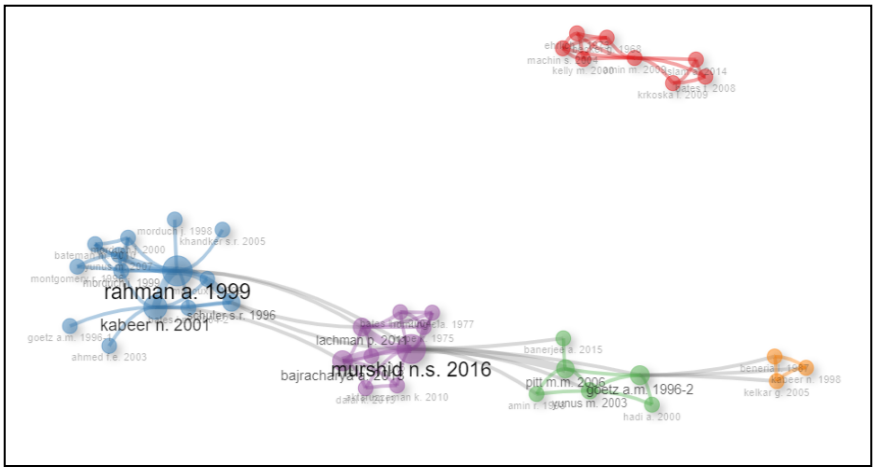
This cloustering, research related to the area of small and medium-sized enterprises (SMEs), which execute "projects" through partial engagement, coupled with the distinction between project innovation and entrepreneurial innovation, makes it difficult to extract innovations in a meaningful way, there is limited research to understand how innovation is perceived and narrated in practice(Page et al., 2021b), generally also address employee/employer relationships and changing employment conditions give rise to issues that are not addressed in conventional transaction-oriented models of individual motivation and responses. The development, maintenance, and violation of psychological and implicit s are described along with their organizational implications.

Figure 5. Co-occurrence network



Within this map, there are "high density areas", which group documents that are referenced to each other, so that the existence of common research fronts can be seen (Braam, Moed and Van Raan, 1991), representing a shared area of work (Hjørland, 2013). The algorithm proposed by Blondel, Guillaume, Lambiotte and Lefebvre (2008) was used and the documents were classified into clusters or categories (different colors).
Then, the Force Atlas II algorithm (Jacomy et al., 2014) was used, which places the most connected nodes in the center of the map, the less connected ones towards the edges and avoids their overlapping; from this, the map of cocitations of this area detailed in Figure 7 was obtained.

Figure 6. *Map of Cocitations*



This technique is based on the graph theory, since it allows generating information associated to the typology and characteristics of the network and the documents that

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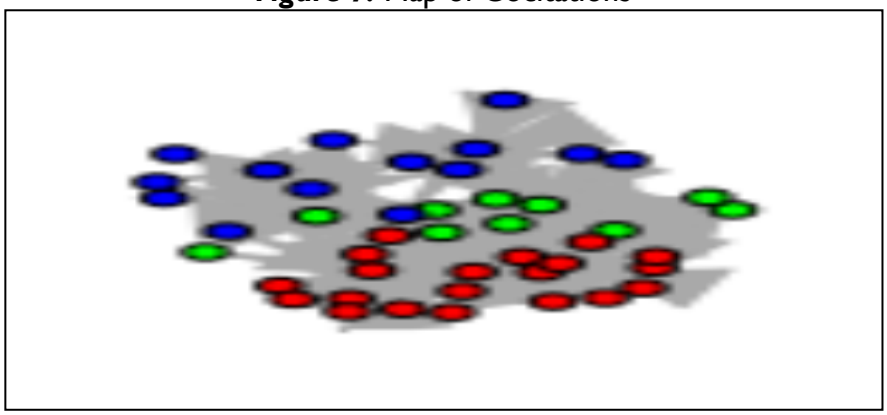
integrate it, three "high density areas" are identified, which group the documents by the colors Cluster-1-blue (14), Cluster-2 red (20) and Cluster -3.green (10).

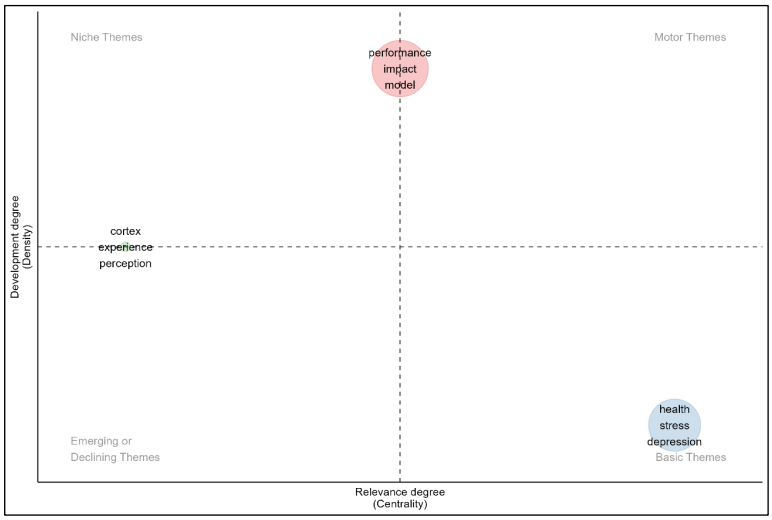
Figure 7. Map of Cocitations



Based on the map in Figure 9, these areas are described in detail in Table 6, where, among other attributes, the identified documents are detailed and each cluster area has a name associated with it based on the cloud of ideas that groups the most relevant terms. Three main research topics were identified as follows

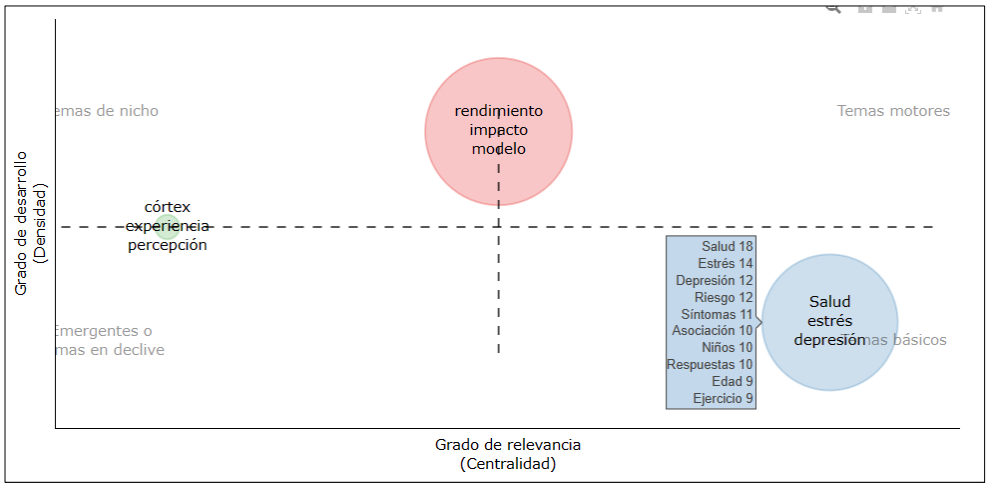
The thematic map that also presents the bibliometric analysis shows that the area of interest of the impact of psychology on performance is located in the first and second quadrant, in a position of medium density or degree of development, but with a high and positive degree of relevance, while the topics of violence are located in the first quadrant where both dimensions are positive, indicating that it is a field that science is continually researching and developing.

Figure 8. Thematic Map



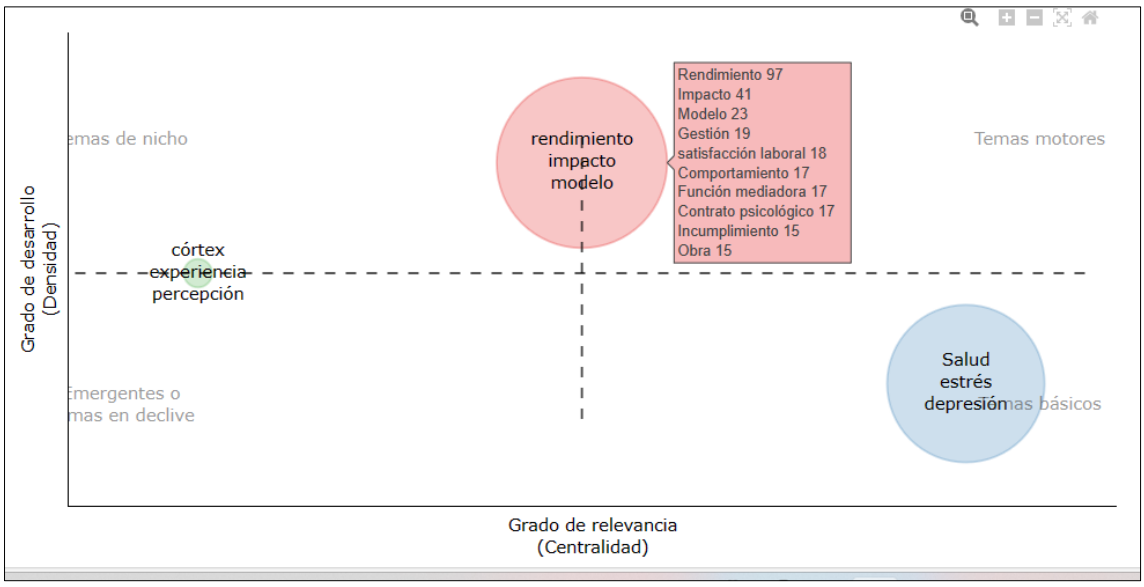
In terms of health, stress and depression, research has been carried out on the constructs of depression, risk, stress and the symptoms identified in the face of psychological breakdown.

Figure 4 . Health, stress and depression



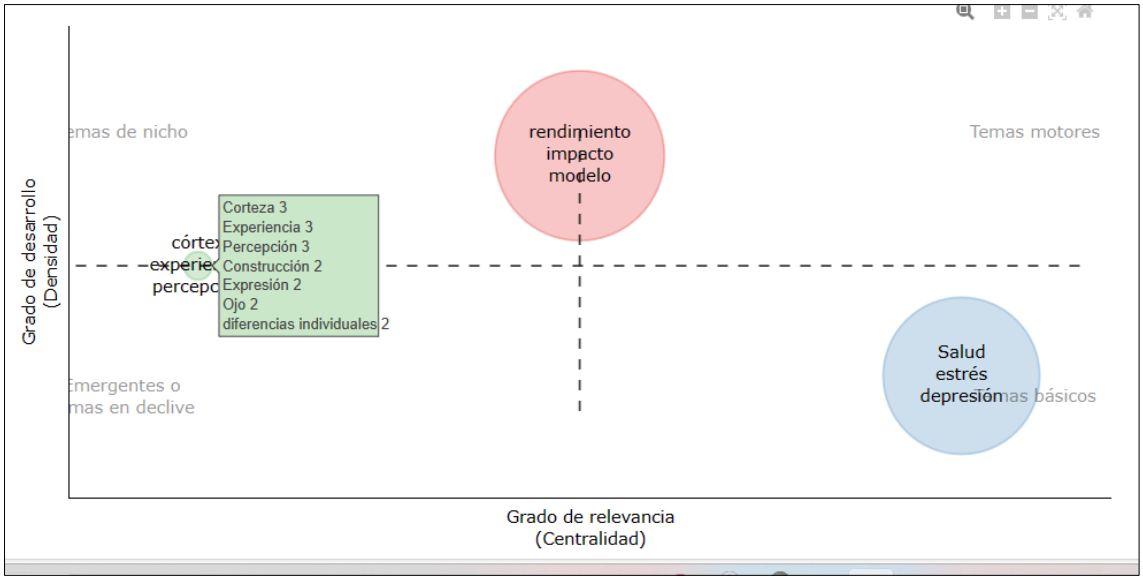
As for the impact and performance models, research has been conducted on the constructs and dimensions Job Satisfaction, Behavior, Noncompliance vs. Psychological

Figure 5. Model Performance Impact



Finally, in terms of experience and perceptions, research has been conducted on the constructs and dimensions Cortex, Experiences and Individual Differences and their impact on Psychological

Figure 6 Experience and Perceptions (Psychological Contract)



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