

# A Bibliometric Analysis of Cultural Intelligence and Multicultural Leadership

Constantin BRATIANU<sup>1</sup>  
Dan PAIUC<sup>2</sup>

## Abstract

*The two COVID-19 pandemic years enhanced the work from anywhere phenomenon and set the virtual multicultural professional environment as a new normal. In these circumstances, the purpose of this paper is to bring up a bibliometric analysis focusing on cultural intelligence (CQ) and multicultural leadership (ML). The study, performed with Nvivo and VOSviewer, and rooted in the Web of Science Core Collection database, visually presents a direct and explicit link between CQ and ML, opening the door to further analysis that will enhance the impact of cultural intelligence not only on multinational leadership but also on the profitability of the companies. This study can provide global leaders, cross-disciplinary researchers and students with the appropriate tools in order to understand the size, the impact and the relations of cultural intelligence and multicultural leadership.*

**Keywords:** *Cultural intelligence, multicultural leadership, multinational management, bibliometric study.*

**JEL classification:** F23, J 24, M14

**DOI:** 10.24818/RMCI.2022.3.319

## 1. Introduction

A study of 600 business decisions taken by 200 teams, performed by the *People Management Journal* and synthesized by Perry (2020), established that when diverse and multicultural teams made a business decision, 87% of the time, they outperformed individuals, also bringing in the equation a gain in speed reactions.

The last two impacted by COVID-19 years questioned the businesses' status quo and models as well as the existing work patterns (Bratianu, 2020; Vătmănescu *et al.*, 2022). We have seen the work from home phenomenon booming and transforming itself into work from anywhere (Rodríguez-Modroño, 2022). By mid-2020, 37% of the European workforce was teleworking, and, worldwide, at the peak of the COVID-19 period, more than 500 million people

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<sup>1</sup> Constantin Bratianu, Bucharest University of Economic Studies, Romania, constantin.bratianu@gmail.com

<sup>2</sup> Dan Paiuc, National University for Political Studies and Public Administration, Bucharest, Romania, dan.paiuc@facultateademanagement.ro

worked from home, amounting to approximately 17% of the world's population (Holliss, 2021).

The virtual teams composed of people from all over the world and from all cultures reinforced the importance of the cultural intelligence as a main driver for multinational leadership (Paiuc, 2021b) that had to adapt to this new disruptive but efficient working way. Also, the pandemic demonstrated the need for understanding the nonlinear phenomena (Bratianu & Vasilache, 2009) and change processes in organizations (Bratianu & Anagnoste, 2011; Năstase, 2010; Năstase & Hotăran, 2011).

After this introduction, we will present the relevant literature review, and we will engage in a bibliometric analysis aiming to demonstrate the tight relationship of cultural intelligence (CQ) to multinational leadership. The article will end with our research conclusions, limitations and new potential study paths generated by our actual work.

## **2. Literature review**

### **2.1 Cultural intelligence (CQ)**

The topic of *cultural intelligence* or *cultural quotient* was raised to the public as a possible emerging concept in early 2000 as part of the globalization perspective of the working force. The actual definition of CQ, as the skill to recognize, relate and work effectively and efficiently in culturally diverse contexts and situations, was first presented in 2003, in the Stanford University Press book, by Ang and Early (2003). It can give the confidence to operate successfully in a wide range of multicultural settings, to cross boundaries and to better perform in multinational teams (Ang, Van Dyne & Tan, 2011), so from this perspective, CQ bears resemblances with the *cultural agility* (Munteanu, 2020). Initially conceived by Ang and Early (2003) as a composition of three factors: motivational, behavioural and mental, CQ, thru the work of Ang, Van Dyne & Koh, (2006), and based on Sternberg's intelligence framework (Sternberg & Detterman, 1986), was rebuild on its actual four pillars: behavioural CQ, cognitive CQ, metacognitive CQ, and motivational CQ. Behavioural CQ represents the capacity to adapt both the nonverbal and verbal behaviour in order to make it effective in diverse and different cultures (Ang Soon and Linn Van Dyne, 2015), while motivational CQ is explained by the individual's own interest and conviction in experiencing different cultures (Jangsiriwattana, 2021). As rephased by Czerwionka, Artamonova and Barbosa (2015), cognitive CQ is related to the capacity to analyze and judge the degree of variation of other cultures – in terms of differences and resemblances – in comparison to a host culture. Metacognitive CQ is linked to the individual's degree of conscious cultural awareness, executive clarifications and adjustments to their own mental map during cross-cultural interactions (Ang & Van Dyne, 2008). Aldhaeri (2017) refers to cultural intelligence as the understanding and the recognition of the values, beliefs, behaviours, customs, and attitudes that different

people have and the ability for those people to use the knowledge to achieve different goals. According to Earley, Ang and Tan, (2006), CQ is presented as an outsider's capacity to interpret and explain someone's unfamiliar and ambiguous gestures the way that person's compatriots would. Contextualizing, higher cultural intelligence allows individuals to work and achieve their goals effectively in international, national, and multicultural-based areas.

Cultural intelligence is also understood through the basis of knowledge, behavioural abilities, and the mindfulness that individuals apply to have seamless interaction with people from a different culture. Cultural intelligence has been divided into three facets: *cross-cultural skills*, *cultural knowledge* and *cultural metacognition*. While *cross-cultural skills* are involved in interpreting behaviour and developing and maintaining cross-cultural relationships, *cultural knowledge* involves processing information about the belief systems, values, and behaviours that people from different cultures have. *Cultural metacognition* is the last of the facets, which involves the capacity for an individual to agree and give a chance to collaborate with people from different cultures. It gives the ability for people to control themselves as a result of having a conscious and explicit analysis when it comes to interacting with other cultures.

As conceived by Livermore (2015), the CQ model consists of four sub-dimensions that contribute to our understanding of the construct of cultural intelligence: *CQ Drive*, *CQ Knowledge*, *CQ Strategy*, and *CQ Action*. *CQ Drive* is represented by the willingness to work with others from different cultures and backgrounds, while *CQ Knowledge* is the degree of understanding of cultural differences and similarities. *CQ Strategy* being the capacity to mentally adapt to new cultures, it represents one of the pillars of multicultural, inclusive leadership (Paiuc, 2021a). Last, *CQ Action* is related to the flexibility to adapt to various cultural norms and habits.

(Livermore (2015) classified the cultural norms and values within 10 clusters based on a continental approach, while, more recently Meyer (2016) and Lewis (2018) deep dived into the topic and summarized the cultural quotient specificities at country level, approach that with the work from anywhere new norm, is questionable as the geographic boundaries are no longer the cultural ones (Bratianu, Iliescu & Paiuc, 2021). In our world, with 15% of the population being migrants (Bradley, 2020), freelancing, also supported by the knowmads phenomenon (Moravec *et al.*, 2013), is quickly evolving to become one of the primary sources of revenue for people across the globe (Warner, 2021). There are roughly 1.1 billion freelancers worldwide, and just in the United States, this freelance workforce is growing three times faster than the overall US workforce. All this, in the context in which while 86% of freelancers work from home during the week, with the rise of digital nomads (and knowmads) and the technological boom, 25% of freelancers work remotely in another country or city (Warner, 2021). All this enhances the importance of cultural intelligence as a base of online and offline agile and adapted communication within multicultural leadership.

As per Whiting (2020), the top 10 skills needed for professional success in 2025 are grouped within four categories: working with people (that is based on cultural intelligence and multicultural leadership), problem-solving, self-management (Bratianu, Iliescu & Paiuc, 2021), and technology use and development.

## 2.2 Multicultural leadership (ML)

According to Warren Bennis in the *Leaders: Strategies for Taking Charge* (Bennis & Nanus, 1997), the academic analysis gives us more than 850 definitions and descriptions of leadership; from which the most utilized, yet still debated nowadays, remains the one that states *leadership* as the capacity to convert vision into reality (Bennis & Nanus, 1997). From this perspective, leadership requires an interconnection between leader, followers and situation (Ersoy, 2014).

Cultural differences have a pivotal role in leadership efficiency and effectiveness, as different cultural environments require different managerial behaviours (Schein, 1997). Taking this analysis one step further, Ang, Van Dyne and Tan (2011) reinforced the idea that CQ is both predictive and determinant of leadership potential. According to Goleman (1996), effective leadership in multinational and multicultural environments can be realized by utilizing three primary leadership styles: *Vision* (by mobilizing people toward change); *Serving* (by building emotional connections); *Leading others to greatness* (by developing people for future responsibility).

The new generation of leaders driving the companies' growth through multicultural contexts need to acknowledge and recognize the culture of their communities and be aware of cultural differences (Eskiyörük, 2020). The leadership style should be, aligned accordingly with existing cultures' patterns, as one of the most important tasks of the ML is to support and drive the diverse availed workforce into an efficient and performant team.

The main challenge of the multicultural leadership is to correctly identify the differences in the cultural background of individual colleagues and to leverage them into a team added value resource, all while enhancing the company's own internal culture (Rahul & Ganesan, 2018) – and its CQ is again the main support and driver (Paiuc, 2021b).

While the top challenges for multicultural leaders, according to Dadu (2018), can be resumed under the categories: cultural differences, language barriers, communication styles, technical blockages, decision-making processes and diverse and non-uniform motivation, the fifth habit of Stephen Covey (2013) states “Seek first to understand, then to be understood.” This is the base of multicultural leadership - powered by CQ that, together with learning appetite, agility, diplomatic approach and due diligence (Dadu, 2018), will ensure the best socio-economic results for the companies.

### 3. Data origins and methodology

Web of Science (WoS) core collection, as the world's leading analytical information platform, and scientific citation search (Li, Rollins & Erjia, 2017) is the foundation of our data retrieval. The analysis was done on the 29<sup>th</sup> of May 2022 via an advanced search model, while the retrieval time span was the standard one: 1975-2022. The default values of WoS were utilized and tested on all the rest of the retrieval settings, while in terms of the document typology and classification, we have not excluded any.

We have primarily searched our core article expressions: "cultural intelligence", and "multicultural leadership". For CQ, we have regrouped "cultural intelligence" and "cultural quotient". However, for ML, because the group composed of the sum of the expressions: "multinational leadership", "multi-national leadership", "multicultural leadership" and "multi-cultural leadership", returned from WoS only 25 research items; we have run another query adding to the first one: "multinational management", "multi-national management", "multicultural management" and "multi-cultural management" - with a constructive result of 106 writings. This last report, with increased significance, will be the one used for further analyses related to ML.

Bellow's results show that the first publications on WoS containing: "cultural intelligence" appeared in 1993, while 2021 and 2022 were the most visible and engaging years for CQ (containing 21% of all-time publications on the topic). This underlines the extreme actuality of our CQ-related research. 1996 was the first appearance year for "multicultural leadership" or "multinational leadership", while "multicultural management" or "multinational management" was first used in 1977.

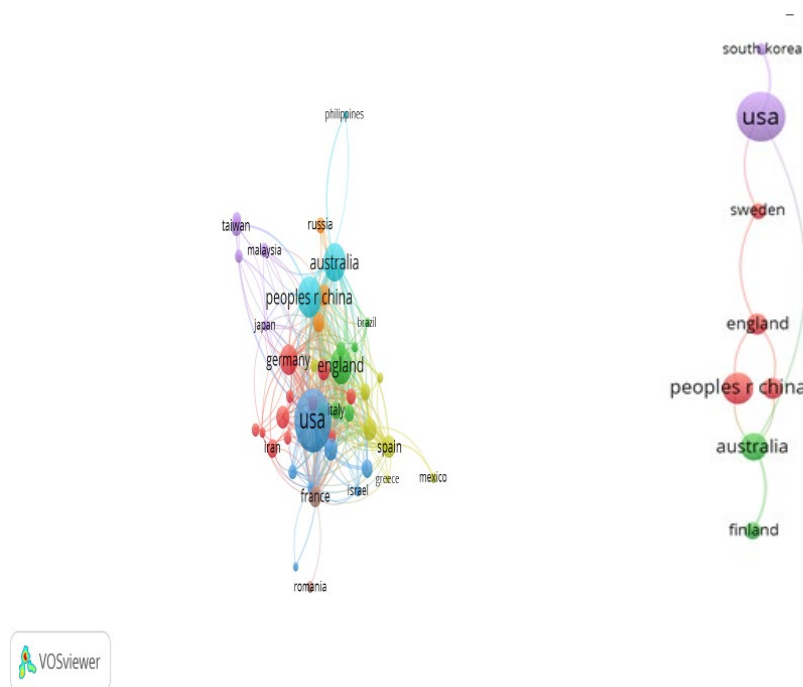
**Table 1. Main concepts frequencies and weight on WoS**

Researched expressions	First mention on WoS	Number of publications till date - on WoS	Weight of 2021 and 2022 publications number within selected expression - on WoS	Main countries
"cultural intelligence" or "cultural quotient"	1993	915	21%	USA (27%), China (11%), Australia (10%), GB (10%), Germany (6%), Canada (3%)
"multi-cultural leadership" or "multicultural leadership" or "multinational leadership" or "multi-national leadership"	1992	25	8%	USA (44%), Australia (8%), GB (4%), China (4%), Belgium (4%)
"multi-cultural leadership" or "multicultural leadership" or	1977	106	2%	USA (26%), China (10%),

Researched expressions	First mention on WoS	Number of publications till date - on WoS	Weight of 2021 and 2022 publications number within selected expression - on WoS	Main countries
"multinational leadership" or "multi-national leadership" or "multi-cultural management" or "multicultural management" or "multinational management" or "multi-national management"				Australia (9%), France (7%), GB (6%), Canada (4%), Japan (4%)

Source: author's own research

USA is the country that generated most of the research related to CQ (27%) or ML (26%-44%), followed by China (4%-11%), Australia (8-10%) and GB (4%-10%). However, our study has a global approach relying on the published specialized literature from 77 countries for CQ and 32 for ML. This finding is also confirmed by the maps of the co-authorships by countries for CQ and ML as it results from Vosviewer and is presented below.



**Figure 1. Co-authorship maps by countries - by VOSviewer for CQ (first map) and ML (second map)**

Source: authors' own research

The same geography is shared and enhanced by the most cited publications related to CQ and ML. As per bellow table 2, the first top 5 cited CQ and ML related writings in WoS were published in the United States:

**Table 2. Top citations for CQ and ML, per authors, publications and countries, on WoS**

CQ				Citations					
			Country	2020	2021	2022	Average per year	Total	
1	Humans have evolved specialized skills of social cognition: The cultural intelligence hypothesis	Herrmann, E; Call, J; (...); Tomasello, M	Sep 7 2007   SCIENCE 317 (5843), pp. 1360-1366	USA	61	56	26	45.63	730
2	Cross-cultural competence in international business: toward a definition and a model	Johnson, JP; Lenartowicz, T and Apud, S	Jul 2006   JOURNAL OF INTERNATIONAL BUSINESS STUDIES 37 (4), pp. 525-543	USA	35	32	10	21.35	363
3	Personality correlates of the four-factor model of cultural intelligence	Ang, S; Van Dyne, L and Koh, C	Feb 2006   GROUP & ORGANIZATION MANAGEMENT 31 (1), pp. 100-123	USA	33	39	7	19	323
4	The Elusive Cultural Chameleon: Cultural Intelligence as a New Approach to Intercultural Training for the Global Manager	Earley, PC and Peterson, RS	Mar 2004   ACADEMY OF MANAGEMENT LEARNING & EDUCATION 3 (1), pp. 100-115	USA	19	25	4	15.47	294
5	From Experience to Experiential Learning: Cultural Intelligence as a Learning Capability for Global Leader Development	Ng, KY; Van Dyne, L and Ang, S	Dec 2009   ACADEMY OF MANAGEMENT LEARNING & EDUCATION 8 (4), pp. 511-526	USA	30	22	4	18.29	256

*Source:* author's own research

<b>ML</b>				Citations					
				<b>Country</b>	2020	2021	2022	Average per year	<b>Total</b>
1	The resource-based view and international business	Peng, MW	2001   JOURNAL OF MANAGEMENT 27 (6), pp.803-829	USA	20	37	9	20.41	<b>449</b>
2	Knowledge flows within multinational corporations: Explaining subsidiary isolation and its performance implications	Monteiro, LF; <u>Arvidsson, N</u> and <u>Birkinshaw, J</u>	Jan-Feb 2008   ORGANIZATION SCIENCE 19 (1), pp.90-107	USA	22	23	11	19.13	<b>287</b>
3	Management consultant talk: A cross-cultural comparison of normalizing discourse and resistance	Merilainen, S; <u>Tienari, J</u> ; (...); <u>Davies, A</u>	Jul 2004   ORGANIZATION 11 (4), pp.539-564	USA	4	5	1	6.63	<b>126</b>
4	National culture, networks, and individual influence in a multinational management team	Salk, JE and <u>Brannen, MY</u>	Apr 2000   ACADEMY OF MANAGEMENT JOURNAL 43 (2), pp.191-202	USA	5	8	1	5.43	<b>125</b>
5	Unravelling HRM: Identity, ceremony, and control in a management consulting firm	Alvesson, M and <u>Karreman, D</u>	Jul-aug 2007   ORGANIZATION SCIENCE 18 (4), pp.711-723	USA	11	8	1	6.75	<b>108</b>

The literature format for all searches was defined as "all type". The most frequent document type is the article: 724, 79% for CQ and 54, 51% for ML. We have the proceeding's papers at the second position: 99, 11% for CQ; 37, 35% for ML. The table below presents the numbers and proportions of various mentioned document types while all data was downloaded on the 29<sup>th</sup> of May 2022, in tab separator format.

**Table 3. Types of retrieved documents for "cultural intelligence" on WoS**

<b>CQ</b>		
<b>Type of Document</b>	<b>Frequency</b>	<b>Share in total</b>
Articles	724	79%
Proceeding's papers	99	11%
Book chapters	64	7%
Others	28	3%
<b>Total</b>	<b>915</b>	<b>100%</b>



<b>ML</b>		
<b>Type of Document</b>	<b>Frequency</b>	<b>Share in total</b>
Articles	54	51%
Proceeding's papers	37	35%
Others	15	14%
<b>Total</b>	<b>106</b>	<b>100%</b>

*Source:* authors' own research

A summary of our research protocol is presented in table 4:

**Table 4. Characteristics and types of the research samples**

<b>Research protocol</b>	<b>Description</b>
Searched expressions	For CQ: "cultural intelligence" and "cultural quotient"; For ML: "multi-cultural leadership" or "multicultural leadership" or "multinational leadership" or "multi-national leadership" or "multi-cultural management" or "multicultural management" or "multinational management" or "multi-national management"
Search database	Web of Science
Search fields	All fields
Type of publications	All types of publications indexed in the Web of Science database
Subject Areas	All subject areas included in Web of Science, up till mid-February 2022
Timespan	1975-2022
Language	All languages
Techniques for bibliometric analysis	Research field mapping (descriptive and performance matrixes via advanced search model) rooted in network analysis.
Software for bibliometric analysis	VOSviewer

*Source:* authors' own research

The WoS exported records contained rich and ample information (full record and cited references exported to *Other Reference Software*) such as title, abstract, authors, publication year, subject, source, country and references.

The bibliometric software VOSviewer (Visualization of Similarities), conceived by van Eck and Waltman, was used to process the systematic bibliometric literature review and to study and visualize the co-occurrence of keywords by creating and bringing out a map rooted in the above presented bibliographic data and based on the method of *full counting*.

#### 4. Results and discussions

As the query CQ+ML is not returning any considerable direct result (only 22 results, generated via VosViewer processing: 136 keywords, 11 meeting the threshold - with minimum occurrences of 2 keywords), we will use in this analysis two starting points (processed via VOSViewer): “cultural intelligence” and “multicultural leadership”; as defined in the second paragraph of the second chapter (*Data origins and methodology*).

The keyword's co-occurrence reflects the research hotspots in the above discipline fields. In all the 915 CQ-related WoS writings, we have secured 3134 keywords altogether. Among them, 257 keywords appeared a minimum of 5 times and met the threshold, accounting for 8.20%. The 106 ML-related publications generated 617 keywords altogether, and among them, six keywords appeared a minimum of 5 times, accounting for 0.8%. However, 87 ML-related keywords met the threshold for an occurrence number of 2.

**Table 5. Keywords meeting the threshold**

Searched expressions	Results [WoS]	Number of keywords [VOSViewer]	Keywords meeting the threshold for a minimum number of occurrences of a keyword of 5	Keywords meeting the threshold for a minimum number of occurrences of a keyword of 2
CQ	915	3134	257	871
ML	106	617	6	87

*Source: authors' own research*

VOSviewer software was utilized to process and construct each main expression's keyword co-occurrence matrix system. Regarding all below figures and tables, the dimension of the nodes and words represents their weights. The greater the node and word frequency are, the larger the weight. The interspace between two nodes reflects the strength of the connection between them. A shorter distance describes a more substantial relationship. The line between two keywords shows that they have been exhibited together. The thicker this line is, the more co-occurrence the keywords have. The nodes with the same colour and tone are regrouped under a synthetic cluster.

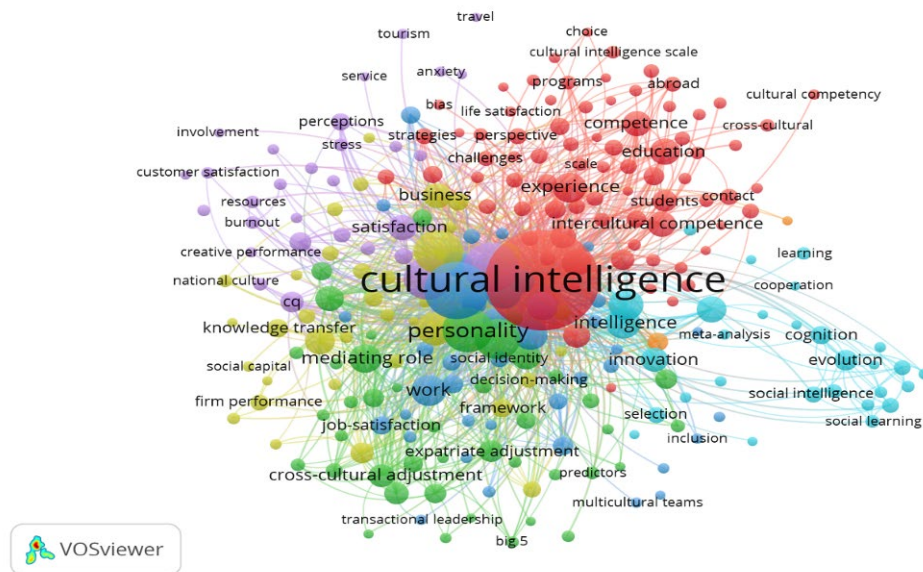
VOSviewer portrays the keywords of CQ-related WoS writings into seven clusters. The red cluster (Figure 2, cluster 1, upper right, 78 items) focused on the main concept of “cultural intelligence” and the “validity” and “reliability” of the model. Bellow table 6 exposes this first cluster, in red colour, in order to acknowledge the structure and the relevant information as provided by VOSViewer.

**Table 6. CQ: Cluster 1: most relevant 15 items by VOSviewer**

Term	Links	Total link strength	Occurrences
cultural intelligence; cognitive cultural intelligence	254; 24	2842; 26	550; 5
competence; intercultural competence; cultural competence; cultural competency	104; 82; 30; 10	231; 171; 47; 14	36; 34; 11; 6
experience; experiences	143; 64	354; 103	50; 16
acculturation	119	269	39
4-factor model	101	233	32
validity / validation	86; 60	162; 84	28; 12
adaptation	82	126	19
attitudes	57	88	14
reliability	24	32	5

*Source:* authors' own research

The green cluster (Figure 2, cluster 2, mid-down, 42 items) is focused on the impact of "personality" on "cultural adjustments," while the blue cluster (Figure 2, cluster 3, center-down, 39 items) enhances on the "performance" matrix as a result of cultural adaptations and effective "leadership". The yellow cluster (Figure 2, cluster 4, center left, 36 items) regrouped the "business" "impact" of the "knowledge" transfer while the purple cluster (Figure 2, cluster 5, center-left up, 31 items) combined "anxiety", "burnout" "stress", concepts with "job satisfaction" highlighting possible CQ's challenges and resolutions. The sapphire blue cluster (Figure 2, cluster 6, down-right, 25 items) focuses on the CQ-related "behaviours," while the last cluster in brown (Figure 2, cluster 7, center-up right, two items) emphasizes the "awareness" of the CQ processes.



**Figure 2. CQ: Keyword's co-occurrence matrix-related publications - by VOSviewer**  
*Source: authors' own research*

At first analyses, we can see that CQ has its main direct links with concepts such as “performance”, “leadership” or “management”. The word “performance” has the highest individual link strength to CQ with a value of 128, while "leadership" on his own states at 43, "management" at 44, "emotional intelligence" at 72, and "trust" at 24. Taking into account that the link strength between two nodes refers to the frequency of co-occurrence and portrays the relationship between two nodes, the bellow table presents the biggest relevant link strengths to CQ, both individual terms and regrouped concepts, as brought out by VOSviewer:

**Table 7. Keyword's co-occurrence matrix of CQ-related publications /**  
**Direct links to CQ - by VOSviewer**

First item	Second items	Fields	Links strength	Cumulated links strength
CQ	• performance	performance (present in 5 clusters)	128	184
	• job performance; job-performance; firm performance; team performance; task performance; expatriate performance; creative performance		56	
	• leadership • transactional leadership; transformational leadership; global leadership; global leaders; global leadership; leader; leader-member	leadership and management	43 54	164

First item	Second items	Fields		Links strength	Cumulated links strength
	exchange;				
	▪ management			44	
	▪ cross-cultural management; human resource management; managers			23	
	▪ knowledge; information	knowledge transfer		26	54
	▪ knowledge sharing; knowledge transfer			28	
	▪ emotional intelligence (72); emotions	multicultural leadership's competencies	EQ (emotional intelligence)	76	290
	▪ communication + intercultural communication		Communication and empathy	31	
	▪ empathy			4	
	▪ innovation		Innovation	17	
	▪ creativity; employee creativity; creative performance		Creativity and adaptability	21	
	▪ adaptability; adaptation			17	
	▪ entrepreneurship		Technology and entrepreneurship	6	
	▪ technology			4	
	▪ diversity; cultural diversity; inclusion		Diversity and Inclusion	48	
	▪ team; teams; virtual teams; multicultural teams; global teams; global virtual teams			18	
	▪ global mindset; mindset (12)		Team Building	18	
	▪ mindfulness			6	
	▪ trust		Trust	24	

*Source: authors' own research*

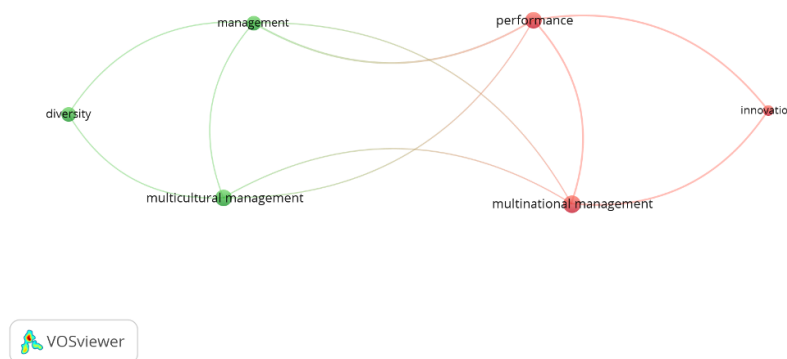
With the highest individual link strength to CQ (128), “performance” category has a regrouped value of (184), while the cumulated link strengths of CQ with leadership and management (164) occupy the second link strength category position within the above table. Considering that business performance is the goal of effective multicultural leadership, we can conclude that CQ is not only a primary competence for ML but also a performance enabler, while KD, with a cumulated link strength of (54), is a direct and leading facilitator of cultural intelligence.

“Emotional intelligence” (EQ), as the third individual most substantial connection to CQ (72), is also linked to emotional knowledge, part of KD (Bratianu, 2013) and, in the fact of, being an essential part of ML according to

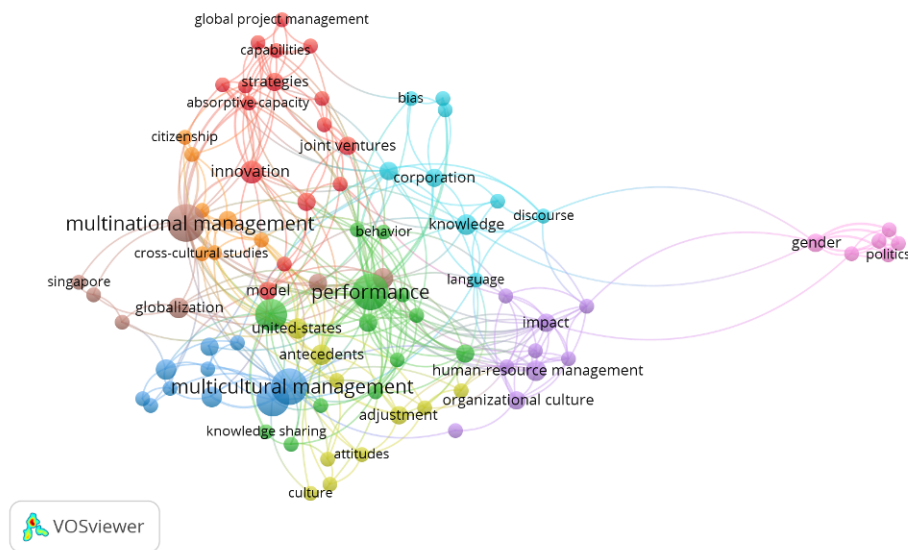
(Malhotra, 2017), assumes the role of one of the foremost common linkage matrix between the three concepts.

CQ has high strengths and thick nodes with all the above ML competencies: “EQ” (cumulated link strength 76), “communication” and “empathy” (cumulated link strength 35), “innovation” (direct 17), “technology” and “entrepreneurship” (cumulated link strength 10), “team” building (cumulated link strength 42, with two direct references to “digital team/s”) and “global mindset” (cumulated link strength 12). The risk-oriented approach of ML is embedded within “entrepreneurship,” as backed by Amazon’s tagline: “it will always be day one in the company” which symbolizes that the world’s biggest generalist retailer is acting on an everyday basis like an early start-up, where, creativity, gain possibilities, but also risks are at highest levels (Amazon website, 2022). Taking into account “diversity and inclusion” as main component of inclusion leadership but also one of the drivers of actual multinational leadership with “working from anywhere option” (Paiuc, 2021a), we can conclude that CQ has cumulated link strengths to ML’s attributes of (290) with position ML as the strongest CQ related connection ( via cumulated feature’s). In the total ML’s strength, we have also embedded “trust” with an individual link to CQ of (24); as Warren G. Bennis mentioned, “Trust is the emotional glue that binds followers and leaders together.” (Hendricks & Phillips, 1997, p 201).

For ML, two approaches were utilized while doing the bibliometric analyses starting: the standard one with only six items meeting the threshold of 5 occurrences of keywords (Figure 3) and the narrower path with 87 items meeting the threshold of 2 occurrences of keywords (Figure 4). While Figure 3 illustrates the direct link of DL with “knowledge” (link strength 1), due to the scarcity of items (6), we will have to analyze Figure 4 for more meaningful connections.



**Figure 3. ML: Keyword's co-occurrence network-related publications - by VOSviewer**  
*- 6 items meeting the threshold of 5 occurrences of keywords*  
 Source: authors' own research



**Figure 4. ML: Keyword's co-occurrence network-related publications - by VOSviewer**  
**- 6 items meeting the threshold of 5 occurrences of keywords**  
*Source: authors' own research*

According to the analysis presented in table 8, "performance" has the most extensive total link strength both for CQ and ML (in its studied versions from figures 3 and 4). This underlines the fact that "performance" is the primary vector for cultural intelligence and multicultural leadership and that CQ is not only strongly directly tight to ML (cumulated links strengths 164 – Table 7) but also heavily connected with its shared main indirect component.

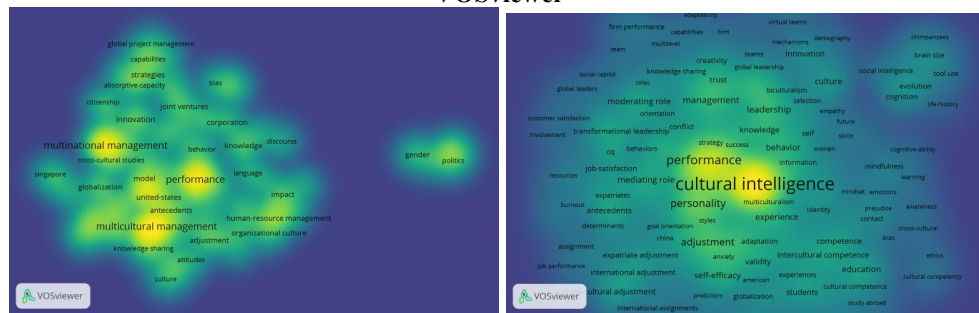
**Table 8. Biggest total link strength for CQ and ML - by VOSviewer**

Item 1	Item 2	Total link strength	Links	Occurrences	From:
CQ	▪ performance	1411	234	193	Figure 2
ML	▪ performance	52	40	12	Figure 4
ML	▪ performance	7	4	12	Figure 3

*Source: authors' own research*

The figure 5 shows the importance of "performance" importance as the primary vector for ML (first map – figure 5) and CQ (second map – figure 5) with the help of the density visualization.

**Figure 5. Density visualization maps for ML (first map) and CQ (second map) - by VOSviewer**



*Source: authors' own research*

In a world where 90% of leaders from sixty-eight countries mention multicultural management as the most significant challenge they experience working across borders (Livermore and Van Dyne 2015), and where performance is the main driver (figure 5), cultural intelligence plays a pivotal role.

## 5. Conclusions

After these descriptive and performance studies and the above research field mapping based on network analyses, we have identified cultural intelligence as the main driver of multicultural leadership.

Precisely, these research clusters help us visualize the connection between the keywords and central notions' attributes used in the mentioned sources and visually demonstrate a comprehensive overview of CQ and ML's fields. However, despite the keen interest in multicultural leadership among researchers, the concept is still evolving at the same pace as technology and "work from home/ anywhere", "augmented reality," and "AI" (Smith & Green, 2018) are shaping every day the new shape of ML (Harari, 2019).

Despite the efforts made in order to perform this research most accurately, it still has some limitations. The analysis relies on the WoS database and does not consider other Scopus or Google Scholar data sources. Also, besides the number of publications, future studies should focus more on the quality and impact of the sources. It is also expected that the number of multicultural leadership-related publications will increase exponentially in the following years, so the presented results might soon become relatively obsolete.

However, this bibliometric analysis enhances the importance of globalization and fast adapting to new cultures and provides an important valuable reference for researchers and practitioners in cultural intelligence and also to



professionals who have the desire to understand cultural differences and the impact of high CQ levels on multinational leadership, work productivity, and on overall business performance (de Mello e Souza and Tomei, 2021).

The conclusions reinforce the importance of CQ and the main vector of ML in the pursuit of enhancing our ability to work together and better perform and could also be presented to students as part of their leadership program because the future is already here and it is multicultural.

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