

Cross-functional teams: A bibliometric review

Duong, Ngoc Anh
Graduate School of Economics, Kyushu University

<https://doi.org/10.15017/7325760>

出版情報：経済論究. 177, pp.23-44, 2024-03-28. 九州大学大学院経済学会
バージョン：
権利関係：



Cross-functional teams: A bibliometric review

Duong Ngoc Anh[†]

Abstract

Cross-functional teams (CFTs), characterized by members from diverse organizational functions working collaboratively towards a shared goal, have become integral to modern management strategies. These teams leverage varied expertise to address complex challenges and enhance organizational performance. This bibliometric review explores the expansive landscape of the CFT literature of 205 published papers extracted from the Web of Science Core Collection using the R package – bibliometrix – and VOSviewer software. Investigating cited and citing publications, the study provides a historical evolution (publication trends, influential authors, and thematic clusters) and identifies emerging research directions in the field. The review contributes valuable insights into the multifaceted dynamics of CFT literature, especially informing future research agendas.

Keywords: Cross-functional teams, Literature review, Bibliometric analysis

1 . Introduction

Henke et al. suggested that a cross-functional team (CFT) is a helpful form of lateral relations where joint efforts across multiple functional departments are required to perform specific tasks (Henke et al., 1993). Thus, CFTs refer to groups of individuals from different functional areas or departments within an organization who come together to work on a joint project, task, or objective. CFT might exploit diverse expertise, skills, and perspectives to address complex issues, promote collaboration, and achieve holistic solutions (Ehrhardt et al., 2014; Love & Roper, 2009; McDonough, 2000).

Regarding its nature, CFT potentially creates a greater scope and depth of information and enjoys perspective from a greater range of users' perspectives, resulting in less goal-dominated and less unidirectional performance (Dussart et al., 2021; Pérez-Luño et al., 2019). Thus, CFT is evaluated as a good concept. However, at the early stage of research history, it was considered a bad implementa-

[†] Graduate School of Economics, Kyushu University

tion as firms had not used CFT as effectively and efficiently as they should and could (Henke et al., 1993). A significant effort was devoted to examining the constraints (member-related issues, structure, or team management)(Kaufmann & Wagner, 2017; McDonough, 2000) or influential factors (knowledge source or system integration)(Dussart et al., 2021; Ghobadi & D'Ambra, 2012) to enhance CFT performance. As the benefits of CFT surpass its downsides, CFT has become a prominent topic in human resources and business management (Kaufmann & Wagner, 2017; McDonough, 2000; R. J. Mitchell et al., 2011).

However, to the best of the author's knowledge, no prior study reviews the CFT topic in general. Most CFT review papers would have their focal points, such as purchasing and supply management (Foerstl et al., 2013) or new product development teams (Dussart et al., 2021; Holland et al., 2000). Meanwhile, the literature review about CFT would provide an understanding of developments in the field with relevant concepts, and methodologies. Literature reviews also offer insights into current trends, challenges, and advanced methodology techniques (Donthu et al., 2021; Mukherjee et al., 2022). This knowledge is valuable for researchers to identify gaps in existing studies, which can guide future research while avoiding duplicating efforts and wasting resources. To address this niche, this study will review CFT literature.

Among three primary review methods (bibliometrics analysis, meta-analysis, and systematic literature review), bibliometric analysis has recently gained colossal attention as it can handle a large dataset objectively (Donthu et al., 2021). As this study would be one pioneer review of CFT while covering a broad scope with a large dataset, bibliometric analysis would be a fundamental methodology. By examining studies published over the past almost 50 years and sources in the Web of Science (WoS), this longitudinal study will offer a comparatively comprehensive view of CFT. It will also illustrate the evolution of CFT research to highlight its dynamics, frontiers, and future direction.

The remainder of this paper begins with the methodology section, which introduces principal metrics when presenting results from bibliometric analysis and how to collect and clean data for subsequent steps. The result of the bibliometric analysis follows it. Then, the results of the thematic analysis will be discussed to propose future research directions. Consequently, the conclusion section will remark on some of this study's main points and limitations.

2. Methodology

2.1. Analysis method

Bibliometric analysis is a comparatively recent literature review methodology developed based on applying statistical and mathematical techniques to bibliographic data (Donthu et al., 2021). A quick comparison of the three principal literature review methods shows that bibliometric analysis

combines qualitative and quantitative analysis. In contrast, systematic literature reviews primarily use qualitative analysis, and meta-analyses mostly rely on quantitative research. Thus, bibliometric analysis has gradually become a widely used methodology in literature review to understand the structure and dynamics of scientific knowledge within a specific field (Mukherjee et al., 2022; Zhao, 2022). Specifically, Donthu et al. reported 1,950 publications of bibliometric papers in 2020 from the Scopus database in the subject areas relating to economics, business management, and social science (Donthu et al., 2021).

Bibliometric analysis relies on bibliographic databases, citation indices, and other sources of academic literature metadata, including abstracts, theory, data source, or methodology. Hence, the principal components when presenting a bibliometric analysis are citation analysis, authorship analysis, journal (source) analysis, keyword analysis, and co-citation analysis (Mukherjee et al., 2022). Moreover, based on co-citation or bibliographic coupling data, bibliometric analysis can calculate the network metrics – centrality or PageRank – to create thematic or social clusters, which help understand the intellectual structure and development phrases in the research field. Foremost, the most distinctive function of bibliometric analysis is to visualize clearly and comprehensibly the network among publications (Donthu et al., 2021; Mukherjee et al., 2022). The specification of the analysis in this study is adapted from Aria and Cuccurullo presented in detail in Table 1 (Aria & Cuccurullo, 2017). This study utilizes a “bibliometrix” package in the R environment and VOSviewer software (version 1.6.20) for data analysis and visualization.

Table 1: Specification of the analysis

Analysis level	Analysis unit	Bibliometric technique	Structure
Source	Journal	Citation and co-citation	Conceptual
Author	Authors	Citation, co-citation, and co-author	Intellectual and social
Institutions	Education institutions	Bibliographic coupling	
Countries	Countries	Citation	
Documents	References and	Co-citation and bibliographic coupling	Intellectual and conceptual
Keywords	keywords	Co-occurrence and trend topics	

2.2. Data extraction process

Data for subsequent analysis is extracted from WoS Core Collection: Citation Indexes. This data source provides a complete citation network of publications from the world’s leading scholarly journals, books, and proceedings across diverse fields from 1900 to the present (Zhao, 2022). The terms “a multidisciplinary team” or “an interdisciplinary team” are also referred to as CFT. Then, the three key terms “cross functional team*”, “multidisciplinary team*”, and “interdisciplinary team*” functioned as the key search items. The initial query is also constrained by the timespan (until the

end of 2023) and three search fields (title, author's keywords, and keyword plus). The initial search defined 6,548 results, which are majorly subjected to the health and medical fields. Then, a series of subject, document type, and language criteria are implied to refine the final database, limited to 205 results, for data export and precise data analysis. The research query is presented in detail in the Appendix.

3. Results

There has been a steady interest in studying CFT since its initial publication in 1975, with an annual growth rate of 4.68%. During the period, 497 scholars investigated CFT; among them, only 34 created 35 single-authored papers. Additionally, on average, there are 2.76 co-authors per paper, accounting for 24.88% of worldwide co-authorship, and the average number of citations per document is 45.21, with 9,267 total citations. The average document age is 12.70 years. The rise in publications and average annual total citations for CFT research throughout time are shown in Figure 1.

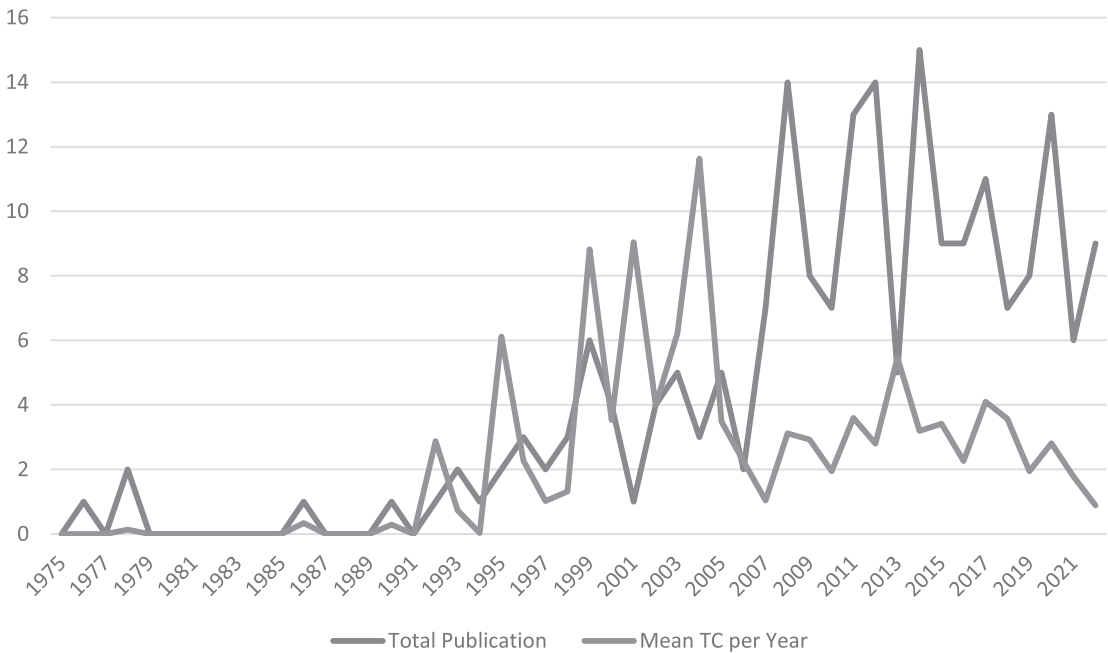


Figure 1: Annual scientific production description (source: author)

3.1. Most relevant source

Table 2 lists the top ten journals ranked by the number of publications and total citations in the field of CFT. As shown in Table 2, the leading journals that published CFT articles include high-tier journals in general management (i.e., Organization Science, Journal of Business Research, or Academy

of Management Journal), team management (i.e., Team Performance Management or Small Group Research), or engineering management (i.e., Journal of Engineering and Technology Management or IEEE Transactions on Engineering Management). The total number of citations is 9,267, and the top ten journals cover 64.44% of total citations. Meanwhile, the top 10 journals, in terms of the number of publications, account for 31.22% of the total publications.

Figure 2 shows the networks of the co-cited journal. As the bigger node indicates a higher citation, the figure also indicates Organization Science, Academy of Management Journal, or Management Science Journal as the most influential sources. In addition, some journals, such as the Journal of Product Innovation Management, the Journal of Applied Psychology, or the Journal of Marketing, are the most cited sources in the CFT research field.

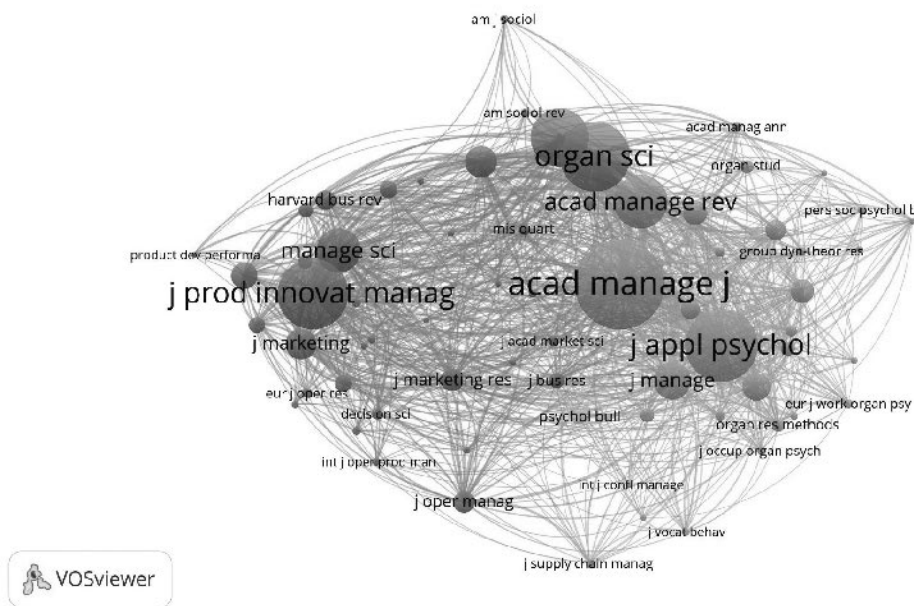


Figure 2: Journal co-citation analysis (source: author)

3.2. Author analysis

The top ten contributed authors in terms of total publication and total citations are listed in Table 3. Noteworthy, all authors in the top ten have possessed no fewer than three articles or 350 citations in the CFT field. In particular, Mitchell R., Boyle B., and Gerwin D. have the highest number of publications; Benassi M., Gargiulo M., and Van der Vegt G.S. are the top three cited authors. Specifically, Benassi M. and Gargiulo M. are co-authors of the article “Trapped in Your Own Net? Network Cohesion Structural Holes, and the Adaptation of Social Capital” which is highly cited in the social network and knowledge management fields (Gargiulo & Benassi, 2000).

Table 2: Top ten journals in CFT research

Top ten journals by publications		TP		Top ten journals by citations		TC		h-index		g-index		m-index	
IEEE Transactions on Engineering Management		12		Organization Science		1,403		5		5		0.2	
Journal of Engineering and Technology Management		8		Academy of Management Journal		1,288		5		5		0.17	
Journal of Product Innovation Management		7		Journal of Product Innovation Management		1,228		7		7		0.22	
Team Performance Management		7		IEEE Transactions on Engineering Management		585		8		12		0.28	
Journal of Business Research		6		Management Science		349		3		3		0.11	
Small Group Research		6		Journal of Business Research		268		6		6		0.35	
Academy of Management Journal		5		Journal of Engineering and Technology Management		243		8		8		0.29	
Organization Science		5		Industrial Marketing Management		237		3		3		0.16	
Concurrent Engineering-Research and Applications		4		Human Relations		193		4		4		0.12	
Human Relations		4		Small Group Research		178		5		6		0.16	

Note: TP – Total publications, TC – Total citations, h-index – h number of publications cited at least h times, g-index – g number of publications receiving at least g^2 citations, m-index – h-index $\div$ the number of years since the first published paper of the scientist.

Table 3: Top contributing authors, institutions, and countries

Top authors by papers			Top authors by citation		Top institutions by frequency		Top countries by frequency		
Authors	TP	Authors	TC	Institutions	Freq.	Countries	Freq.	TC	
Mitchell R.	6	Benassi M.	778	Carleton University	16	USA	239	3,622 (=1)	
Boyle B.	5	Gargiulo M.	778	University Groningen	13	Canada	62	785 (=4)	
Gerwin D.	5	Van der Vegt G.S.	686	University Newcastle	12	Australia	56	650 (=6)	
Bhuiyan N.	3	Bunderson J.S.	675	Michigan State University	11	UK	53	731 (=5)	
Bunno T.	3	Mcdonough E.F.	570	Concordia University	9	China	40	380 (=8)	
Giles M.	3	Gerwin D.	383	Maine Medical Center	8	Netherlands	33	943 (=2)	
Idota H.	3	Gemuenden H.G.	379	MIT Sloan School of Management	8	Italy	20	433 (=7)	
Mccomb S.A.	3	Hoegl M.	379	Purdue University	7	Japan	12	31 (=17)	
Parker V.	3	Weinkauf K.	379	Georgia State University	6	Spain	12	98 (=10)	
Santa R.	3	Edmondson C.	359	Macquarie University	6	Sweden	12	55 (=14)	

Note: TP – Total publications, TC – Total citations, Freq. – Frequency.

Figure 3a illustrates the production over time of the top ten contributing authors regarding the number of published articles. Among the top three authors, Gerwin D. has the first publication in the CFT field at the early stage (Gerwin & Moffat, 1997a, 1997b), while Mitchell R. and Boyle B. captivated at the latter phase (R. Mitchell & Boyle, 2015; R. J. Mitchell et al., 2011). Remarkably, Gerwin D., Bhuiyan N., McComb S.A., and Santa R., frequently revised the CFTs fields after a long time.

Author co-citation analysis examines the frequency with which two or more authors are cited together in scholarly literature. Figure 3b presents the author's co-citation network within the CFT field with no significant outstanding-sized nodes or weighted linkage. It indicates an equivalent contribution among the authors. Especially, the two clusters interfering in terms of concept demonstrate the citation behaviours and collaboration rather than intellectual influence. For specific, Edmondson A.C. and Ancona D.G. focused on the new product development teams (Ancona & Caldwell, 1992; Edmondson & Nembhard, 2009), while McDonough E.F. and Van der Vegt G.S. studied the performance and success of CFT (McDonough, 2000; Van Der Vegt & Bunderson, 2005).

In addition, the author's collaboration network, displayed in Figure 3c, is a form of social network analysis that visualises and analyses the patterns of collaboration within the CFT fields. Among 12 clusters, the top three giant clusters attracting no less than five authors, emphasize diversity and identity (R. Mitchell & Boyle, 2015; R. J. Mitchell et al., 2011), innovation and product development team (Gerwin & Barrowman, 2002; Gerwin & Moffat, 1997a), and firms in Japan and ASEAN (Tsuji et al., 2018).

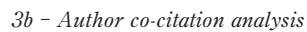
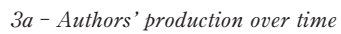


Figure 3: Author analysis (source: author)

3.3. Top institutes and countries

Until the end of 2023, 299 institutes and 35 countries have examined the CFT field. Table 3 also lists the top ten influentials in the CFT field. All the top ten institutes have no less than six times contributing and come from the Occident. Carleton University ranked at the top with a frequency of 16, followed by University Groningen (13), University Newcastle (12), and Michigan State University (11). Figure 4 demonstrates the bibliographic coupling analysis of institutions. Among the top influentials, Carleton University has studied the CFTs since the early stage while University Newcastle captivated at the most recent phase. Noteworthy, the USA surpasses the other countries in both term frequency and total citation.

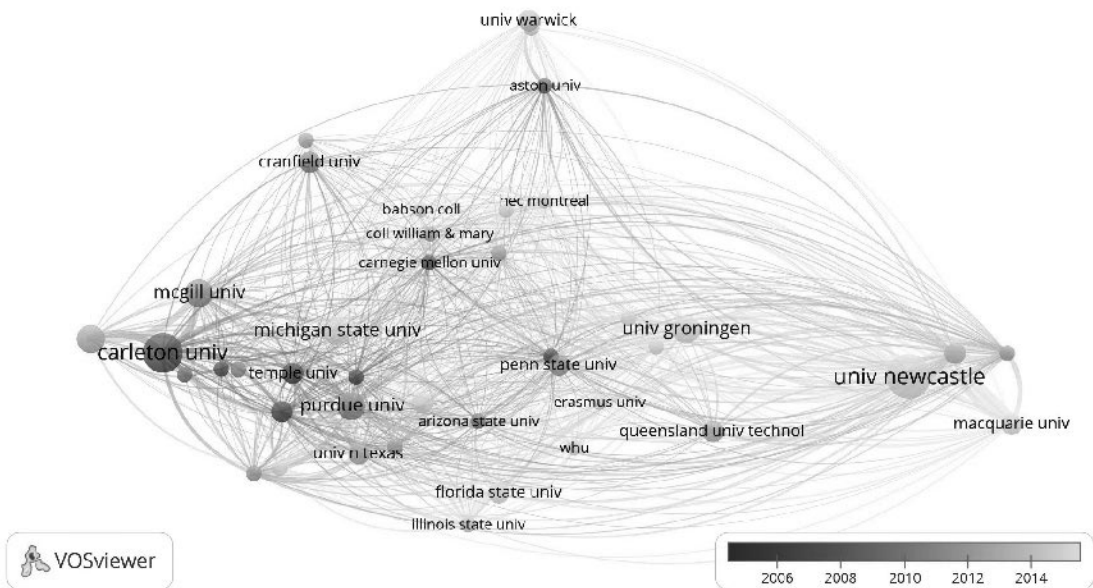


Figure 4: Bibliographic coupling network of top institutes (source: author)

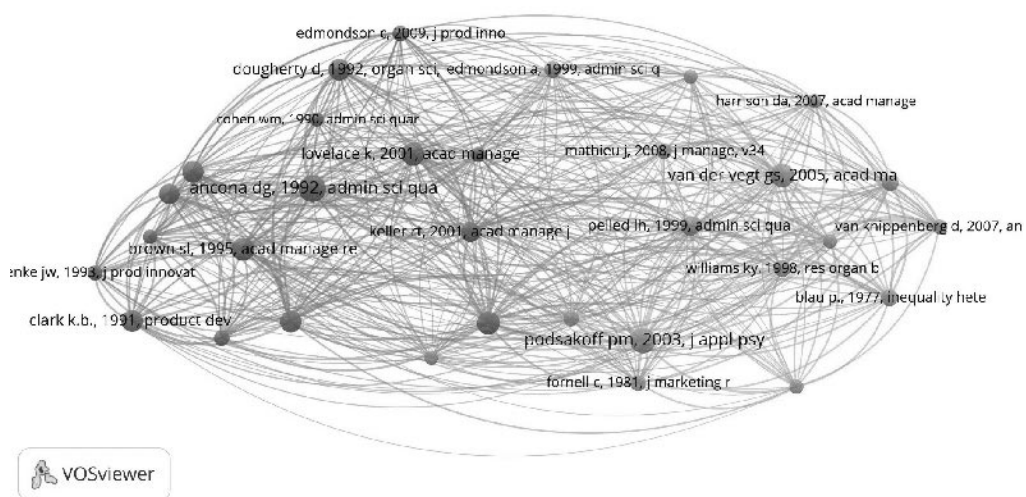
3.4. Document analysis

Co-citation focuses on the frequency of joint citation of two documents, while bibliographic coupling examines the overlap of references between two documents (Donthu et al., 2021). Both co-citation and bibliographic coupling networks are helpful maps for identifying influential works and understanding the intellectual structure of the field (Aria & Cuccurullo, 2017). Table 5 illustrates the co-citation and bibliographic coupling network of CFT studies.

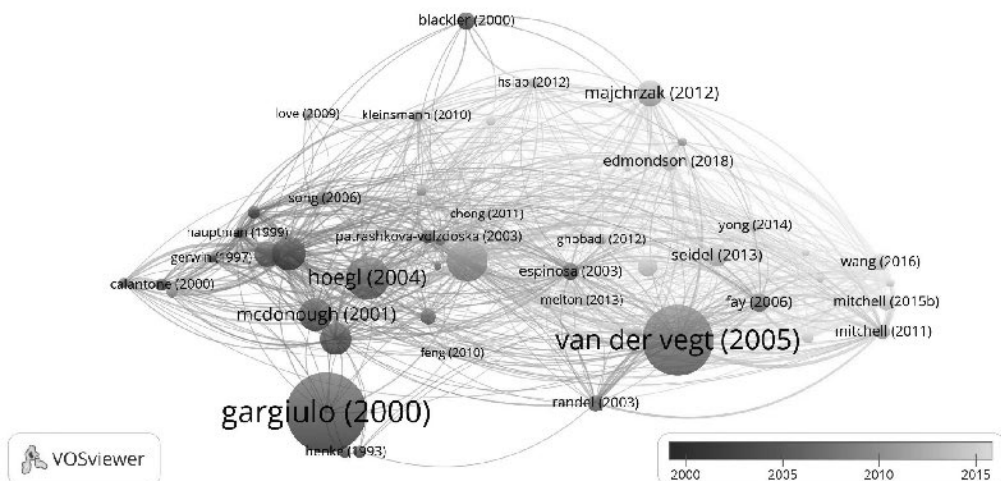
Co-citation analysis classifies the references in CFT studies into two clusters, as demonstrated in Table 5a. The first cluster covers general concepts relating to CFTs, benefits and challenges of diverse expertise in a collaborative framework (Ancona & Caldwell, 1992; Edmondson & Nembhard,

2009). Meanwhile, the other clusters related to the more contemporary concept (diversity - Van Der Vegt & Bunderson, 2005; Van Knippenberg & Schippers, 2007) and methodology in the CFT field (structural equation model - Fornell & Larcker, 1981 and method bias - Podsakoff et al., 2012).

On the other hand, bibliographic coupling analysis categorises the documents in the CFT field into four clusters following the timespan, as displayed in Table 5b. The bigger the node, the more influential the works, and the most principal articles concentrated in the period 2000-2005, establishing the fundamental aspects of CFT in terms of the network (Gargiulo & Benassi, 2000), factors affecting the success of CFT (McDonough, 2000), coordination and commitment within teamwork (Hoegl et al., 2004), and diversity (Van Knippenberg & Schippers, 2007).



5a - Document co-citation network



5b - Document bibliographic coupling network

Figure 5: Document analysis (source: author)

3.5. Keyword analysis

Keyword analysis provides insight into the research topics and trends within a specific field (Donthu et al., 2021). Specifically, this study provides results of the co-occurrence analysis of all keywords (consisting of author keywords and keyword plus), presented in Figure 6 and Table 4, and the trend topics each year based on keyword plus with a word minimum frequency of 5, shown in Figure 7.

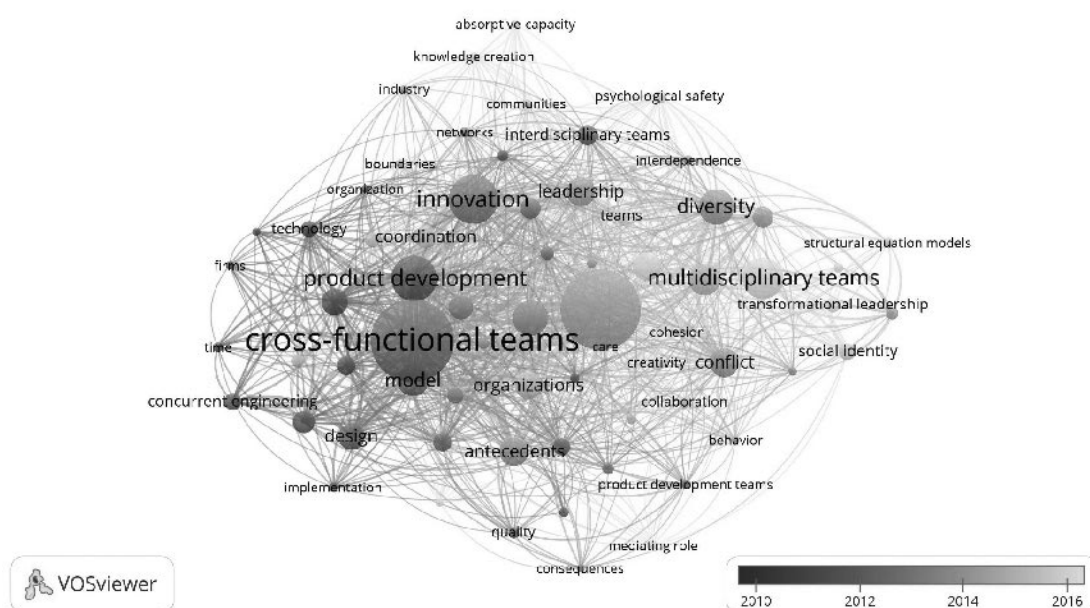


Figure 6: Keyword co-occurrence network for CFT research 1975 - 2023 (source: author)

Of the 1,085 author keywords and keyword plus, 70 meet the threshold of 5 as the minimum number of occurrences, creating four clusters of keywords. Figure 6 points out some influential keywords (bigger-sized nodes), including CFT (occurrences: 82), performance (78), innovation (43), product development (39), and multidisciplinary teams (35). The outstanding occurrence value of CFT and performance affirms the principal role of these two topics in the CFT's conceptual structure. Additionally, it is demanding for further research into these low occurrence weight terms, as the difference in occurrence weight among the key terms suggests a potential niche in the literature.

Among four clusters of keyword co-occurrence analysis, scholars have cultivated the first two clusters from the early stage, focusing on factors influencing team effectiveness, including model, design, integration, antecedent, impact, or cooperation. The third cluster emphasises innovation regarding knowledge, knowledge creation, or transactive memory. Last but not least is the most contemporary cluster, which is about social-cultural aspects of diversity, interdependence, social identity, transformational leadership, or implementation of the structure equation model technique.

Table 4: Co-occurrence analysis results for all keywords

	Keywords	OC	TLS	APY	AC	ANC
Cluster #1	cross-functional teams	82	365	2011.66	51.32	0.95
	product development	39	219	2010.46	55.90	1.09
	model	25	142	2011.40	62.92	1.16
	design	20	105	2010.55	30.50	0.82
	integration	20	127	2009.55	55.05	0.82
Cluster #2	management	29	141	2012.86	49.34	0.96
	antecedents	22	147	2013.14	53.95	1.20
	organizations	21	121	2014.67	29.76	0.88
	impact	12	59	2010.75	68.92	1.37
	cooperation	11	69	2012.36	31.27	0.81
Cluster #3	innovation	43	223	2012.16	46.60	1.20
	knowledge	22	126	2016.41	43.64	1.39
	leadership	22	112	2013.68	34.86	0.82
	coordination	17	94	2015.00	42.12	1.20
	cross-functional team	15	80	2012.07	30.13	0.74
Cluster #4	performance	78	402	2013.72	46.24	1.23
	multidisciplinary teams	35	146	2015.71	42.00	1.50
	diversity	29	157	2013.45	84.00	1.71
	work	25	121	2014.44	43.48	1.13
	conflict	22	128	2013.14	102.91	1.94

Note: OC – occurrences, TLS – Total link strength, APY – Average publish year, AC – Average citation, ANC – Average normalised citation.

70 keywords that satisfy the minimum occurrences of 5 for network visualisation and analysis. This table only included the top eight keywords based on occurrences for each cluster.

There are various trend topics at the specific time mile of the CFT field, including (1) diversity and equity in CFT, (2) agile and adaptive CFT, (3) leadership and conflict resolution in CFT, (4) CFT in specific industries, (5) knowledge sharing and communication for innovation, or (6) CFT and organizational culture. Among them, “trust” and “implementation” have been the trend topics for no less than 15 years due to the confronts when establishing and maintaining trust among members and implementing CFT effectively and efficiently as expected.

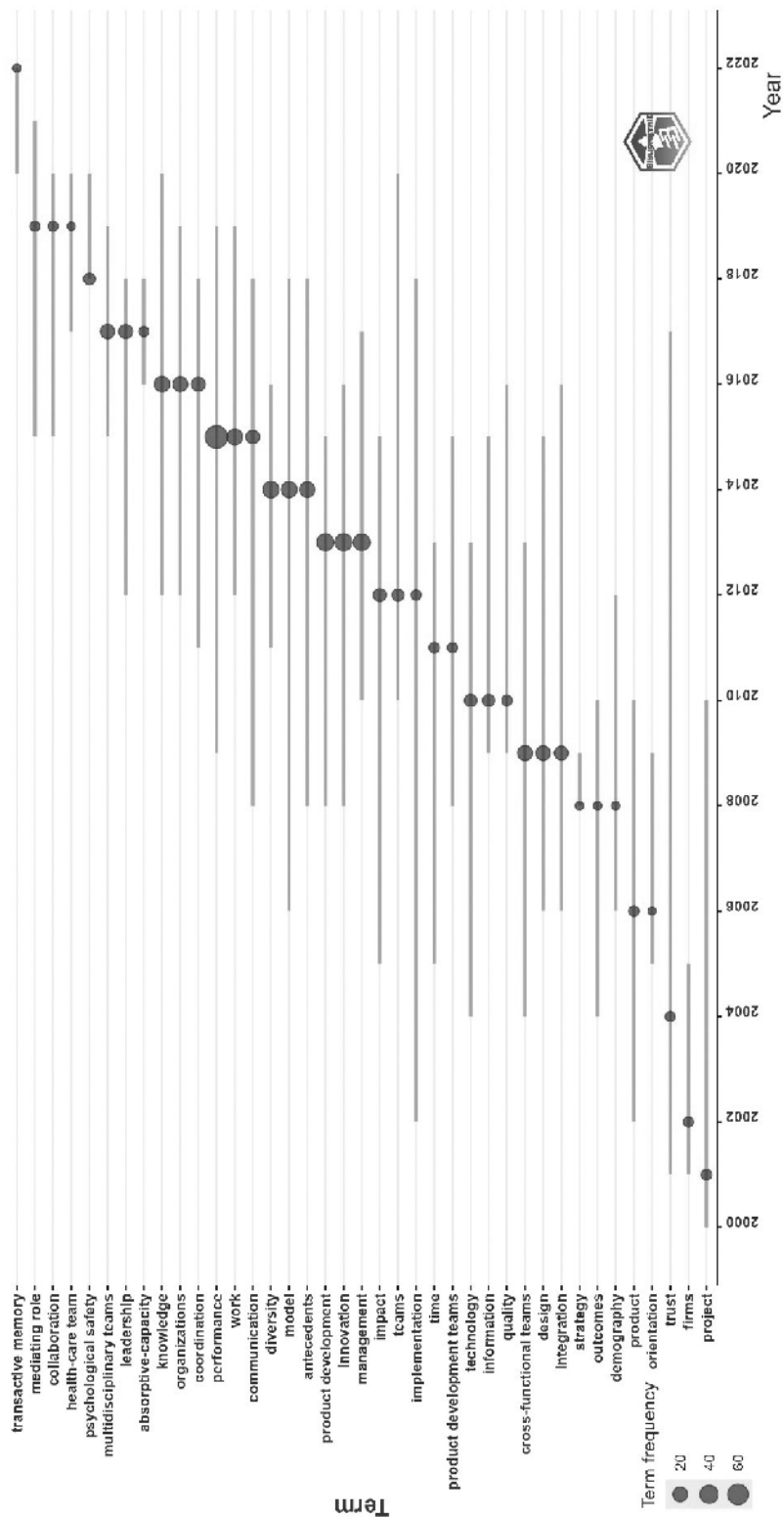


Figure 7: Trend topics in the CFT field along the timespan (source: author)

4. Evolution and future research direction

4.1. Historical Evolution

The evolution of the CFT fields is illustrated via histogram (Figure 8) and thematic evolution (Figure 9a), especially Table 5 summarises the most influential works in historiography. These 14 articles established the foundation for the literature structure of CFT along the timeline in three clusters. Meanwhile, thematic evolution presents the top keywords throughout three time intervals within the research field. With two cutting years in 2009 and 2017, Figure 9a depicts the topic evolution of CFT literature over 45 years, creating three temporal slices with nearly equal numbers of publications.

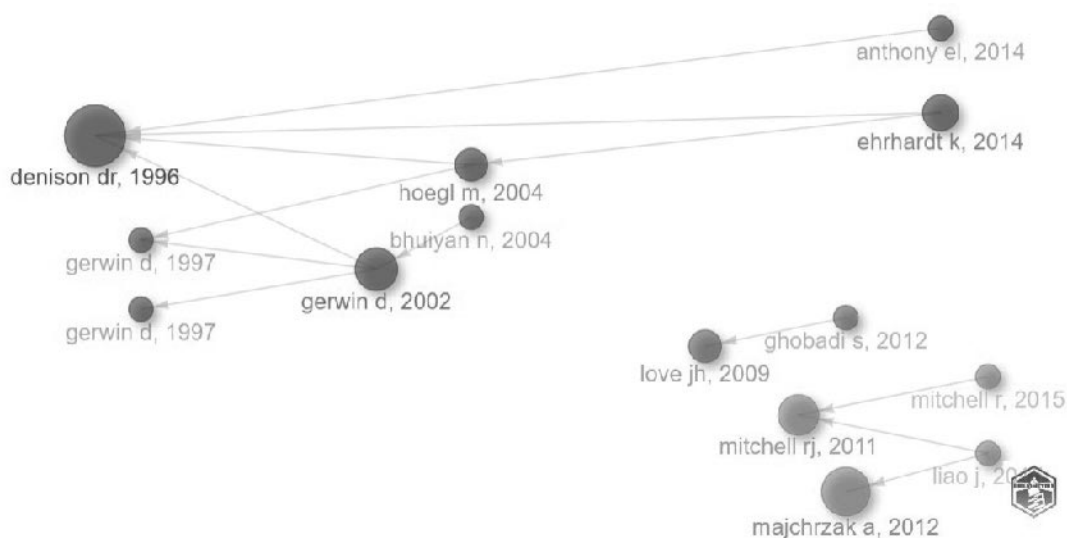


Figure 8: Historiography of CFT literature (source: author)

During the early years of CFT research, the focus was on conceptualising and understanding the phenomenon and exploring theoretical foundations, characteristics, and potential advantages. The themes often revolved around team dynamics, communication structures, and the benefits of diverse expertise in a collaborative framework. The field has shifted from focusing on theoretical foundations to examining factors influencing team effectiveness, such as leadership styles, conflict resolution mechanisms, and organizational support structures.

Recent studies have focused on the intersection of CFTs with contemporary organizational trends, such as the impact of digital transformation on team collaboration, and the role of CFT in fostering innovation and agility. Scholars have also begun exploring the influence of diversity, equity, and

inclusion within CFTs, reflecting a growing awareness of socio-cultural aspects shaping collaborative work environments. This evolution suggests a maturation of CFT research, transitioning from foundational conceptualization to addressing practical challenges and adapting to the changing landscape of organizational dynamics.

Table 5: Foundational papers in historiography

Articles	Titles	GCS	LCS
(Denison et al., 1996)	From Chimneys to Cross-Functional Teams: Developing and Validating a Diagnostic Model	265	25
(Gerwin & Moffat, 1997b)	Withdrawal of Team Autonomy during Concurrent Engineering	69	4
(Gerwin & Moffat, 1997a)	Authorizing Processes Changing Team Autonomy during New Product Development	31	4
(Gerwin & Barrowman, 2002)	An Evaluation of Research on Integrated Product Development	208	9
(Bhuiyan et al., 2004)	Simulation of the New Product Development Process for Performance Improvement	72	4
(Hoegl et al., 2004)	Interteam Coordination, Project Commitment, and Teamwork in Multiteam R&D Projects: A Longitudinal Study	379	5
(Ehrhardt et al., 2014)	Examining Project Commitment in Cross-Functional Teams: Antecedents and Relationship with Team Performance	32	6
(Anthony et al., 2014)	Crossing Functions above the Cross-Functional Project Team: The Value of Lateral Coordination among Functional Department Heads	17	4
(Love & Roper, 2009)	Organizing Innovation: Complementarities Between Cross-Functional Teams	79	5
(Ghobadi & D'Ambra, 2012)	Knowledge Sharing in Cross-Functional Teams: A Coopetitive Model	71	4
(R. J. Mitchell et al., 2011)	When Do Interprofessional Teams Succeed? Investigating the Moderating Roles of Team and Professional Identity in Interprofessional Effectiveness	111	8
(Majchrzak et al., 2012)	Transcending Knowledge Differences in Cross-Functional Teams	215	13
(Liao et al., 2015)	Predicting Transactive Memory System in Multidisciplinary Teams: The Interplay between Team and Professional Identities	38	4
(R. Mitchell & Boyle, 2015)	Professional Diversity, Identity Salience and Team Innovation: The Moderating Role of Open-mindedness Norms	83	4

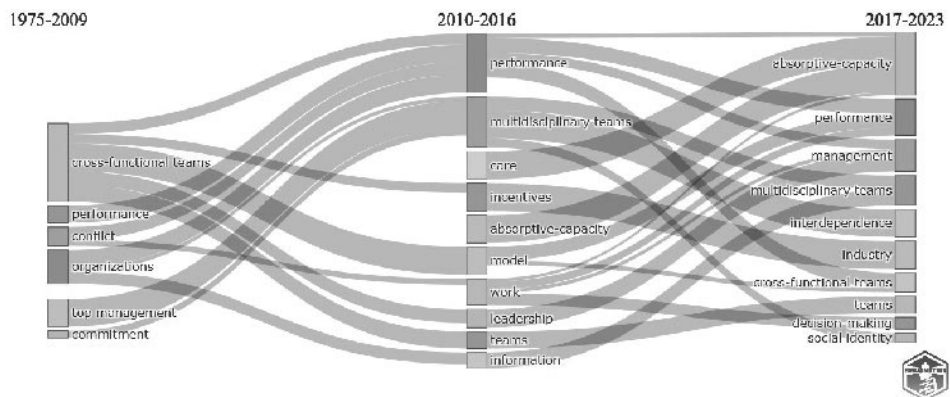
Note: GCS – Global Citation Score, LCS – Local Citation Score.

4.2. Thematic map

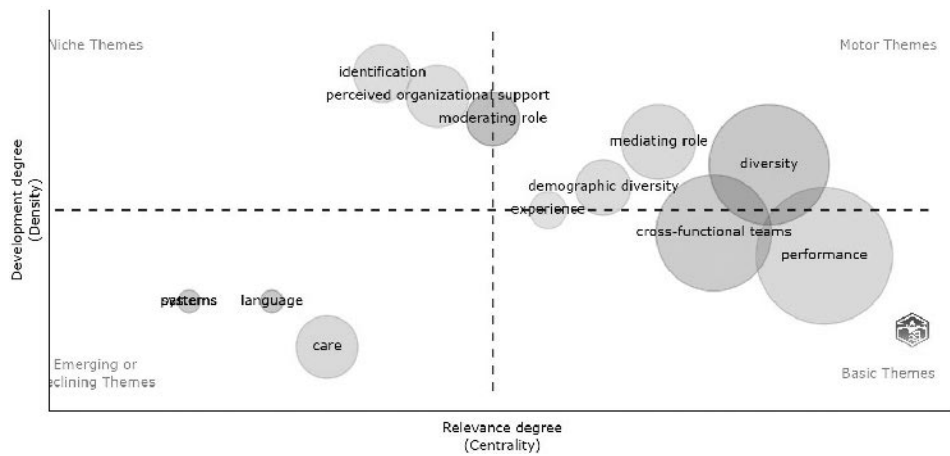
In the context of bibliometric review, a thematic map is a visual presentation of the distribution and interrelationship of research topics and themes within a specific field. These themes would then be divided into four quarters: basic, motor, declining, and niche themes. Using this map, researchers can identify their research paths to either fill in the gaps or stay away from emerging issues. The theme maps of CFT literature over a 45-year timespan and the most recent time slice (2017-2023) are displayed in Figure 9b and Figure 9c, respectively.

In Figure 9b, four research themes, including care, language, patterns, and systems, have become emerging or declining themes in the CFT literature. Notably, “patterns” and “systems” themes have the same value of centrality and density to be overlapped in the thematic map. Besides, performance, CFT, and diversity are three fundamental themes with giant nodes in the basic and motor quarters. Similar to the previous analysis, it also exposes the motor and niche themes, including (1) mediating and moderating factors affluent the implementation of CFT and (2) social-cultural aspects like demographic diversity or profession identification.

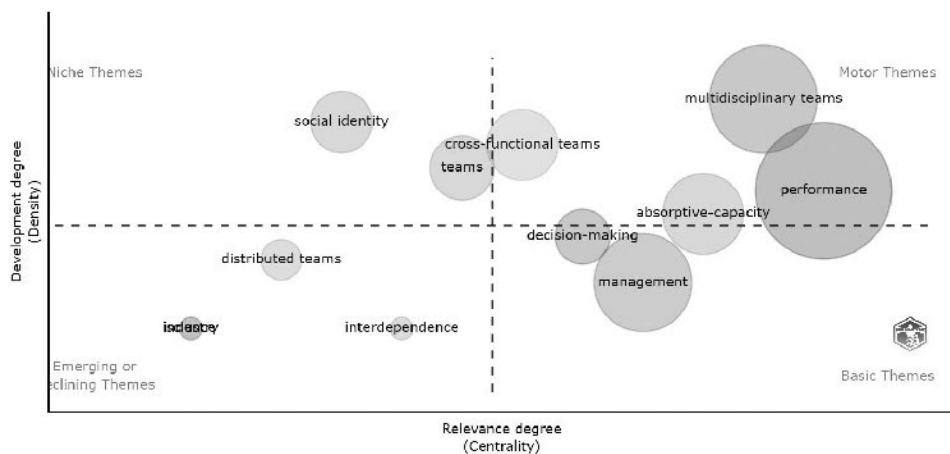
Moreover, the thematic map is adjusted to the most recent time slice of 2017-2023 in Figure 9b and Table 6. In specific, four clusters (#7, #10, #11, and #12) covering minor topics for specific industries or perspectives have been evaluated as emerging themes in the most contemporary studies. It is noted that clusters “science” and “industry” (#7 and #11) share the same position in Figure 9b as obtaining the same centrality and density values. Two clusters (#4 and #5) with equivalent centrality values posited themselves in basic and motor themes about decision-making under situation awareness without shared information. Four fundamental themes, performance (#1), management (#2), multidisciplinary teams (#6), and CFT (#9) not only receive substantial interest but also integrate with other modern topics, for example, diversity, leadership style, conflict resolutions, knowledge and information for innovation, or psychological safety and job satisfaction. Noteworthy, two social-cultural aspects have been developed as independent topics, absorptive capabilities concerning emotional intelligence or collaboration (#3) and the integrative model of social identity and work groups or task interdependence (#8). Lastly, the implications of remote work and virtual collaboration, in addition to the integration of social-cultural components, may play as potential drivers for the development of the CFT field.



9a - Thematic evolution



9b - Thematic map for timespan 1975-2023



9c - Thematic map for time slice 2017-2023

Figure 9: Thematic analysis (source: author)

Table 6: Summary of 12 clusters in the thematic map for time slice 2017-2023

#	Freq.	Cen.	Den.	n	Keywords
1	162	12.62	71.55	28	performance (32), work (12), knowledge (10), model (9), organizations (9), coordination (8), psychological safety (8), antecedents (7), diversity (7), innovation (7)
2	37	2.81	52.88	9	management (9), leadership (8), communication (6), context (3), mediating role (3), boundaries (2), communities (2), identity (2), social exchange (2)
3	19	2.92	67.36	8	absorptive capacity (3), collaboration (3), impact (3), care (2), emotional intelligence (2), health (2), meta-analysis (2), quality (2)
4	7	1.89	63.89	3	decision-making (3), perceived organizational support (2), supply chain management (2)
5	10	1.10	71.88	4	teams (4), group decision-making (2), situation awareness (2), unshared information (2)
6	54	6.90	90.30	19	multidisciplinary teams (9), transformational leadership (4), demographic diversity (3), health-care team (3), intragroup conflict (3), task conflict (3), top management (3), top management teams (3), workgroup diversity (3), information (2)
7	2	0.00	50.00	1	science (2)
8	9	0.69	77.08	4	social identity (3), integrative model (2), task interdependence (2), workgroup (2)
9	13	1.35	75.83	5	cross-functional teams (4), research-and-development (3), job-satisfaction (2), software-development (2), success (2)
10	2	0.75	50.00	1	interdependence (2)
11	2	0.00	50.00	1	industry (2)
12	4	0.25	62.50	2	distributed teams (2) perspective-taking (2)

Note: Freq. – Frequency, Cen. – Centrality, Den. – Density, n – number of keywords in one cluster.

Cluster #1 and #6 have 28 and 19 keywords respectively, only the top 10 keywords are listed here.

The number in round brackets is the frequency number for the respective keyword.

5. Conclusion

CFTs bring together members with diverse expertise, skills, and perspectives to address complex tasks or projects that require input from various disciplines (Henke et al., 1993). In contrast to traditional, departmental-based teams, CFTs cut across organizational silos, fostering collaboration and integration (Dussart et al., 2021; Foerstl et al., 2013). In management studies, the dynamics, challenges, and effectiveness of CFT are often topics of research and analysis, contributing to a better understanding of how organizations can harness the potential of diverse teams for improved performance and innovation (Ehrhardt et al., 2014; Love & Roper, 2009).

This bibliometric review delves into the realm of CFT, employing meticulous analysis through

citation, co-citation, bibliographic coupling, and thematic analysis techniques. The review not only focuses on the quantitative aspects of bibliometrics (key trends and influential works) but also explores qualitative dimensions, such as gaps in the literature and potential areas for future research. By using WOS-extracted data and applying sophisticated bibliometric techniques, this study contributes to a deeper understanding of the CFT literature and provides valuable insights for researchers and practitioners.

On the one hand, this bibliometric review of CFT contributes to theory by (1) identifying principal themes and trends, (2) mapping conceptual, intellectual, and social structure, (3) recognising crucial contributions from various aspects that have significantly shaped the landscape of CFT literature, and (4) indicating potential gaps for future research direction. On the other hand, from a practical perspective, this study provides a comprehensive overview of CFT, which can be a guide map to gain an understanding of best practices, challenges, and strategies related to CFT. Researchers can save time and effort in choosing the potential research directions, methodologies, or references. By offering valuable insights, this review also aids practitioners, policymakers, and organizational decision-makers in fostering effective cross-functional collaboration.

It is also important to acknowledge the limitations of bibliometric review. First of all, the WoS database might not encompass all relevant publications, especially if certain disciplines or journals are not well-represented in its database. Then, coverage bias may result in a skewed understanding of the literature, while disciplinary focus may be limited in interdisciplinary areas. In addition, solely the English language may exclude valuable research published in other languages, and publication lag (delay between the actual research conducted and the review process) may result in the omission of recent studies, the implications of remote work and virtual collaboration on team dynamics as an example. Remarkably, quality assessment requires a more nuanced evaluation beyond bibliometrics. To overcome these confronts, it is recommended to complement bibliometric reviews with other research methods, such as systematic literature reviews, content analysis, and expert opinions, or merge data from the WoS with Scopus, PubMed, or Google Scholar.

Appendix – Query Description

Categories	Criteria	# refined documents
Query outcomes before search refine (for 1900 – 2023) Use the keywords “cross functional team*”, “multidisciplinary team*”, and “interdisciplinary team*” in the title, author keywords, and keyword plus. Timespans is 1900-01-01 to 2023-12-31		6,548
Subject area	Limit to the following subjects: Management (205), Business (110), Operation research management science (35), Business Finance (10), and Economics (9).	264
Document Type	Limit the documents to articles (202), review articles (9), and early access (3)	211
	Exclude all book series or correction	207
Language	Exclude all languages other than English	205
Final number of documents (after search refine and no duplication)		205

References

1. Ancona, D. G., & Caldwell, D. F. (1992). Demography and Design: Predictors of New Product Team Performance. *Organization Science*, 3(3), 321-341. <https://doi.org/10.1287/orsc.3.3.321>
2. Anthony, E. L., Green, S. G., & McComb, S. A. (2014). Crossing Functions above the Cross-Functional Project Team: The Value of Lateral Coordination among Functional Department Heads. *Journal of Engineering and Technology Management*, 31, 141-158. <https://doi.org/10.1016/j.jengtecman.2012.12.001>
3. Aria, M., & Cuccurullo, C. (2017). Bibliometrix: An R-tool for Comprehensive Science Mapping Analysis. *Journal of Informetrics*, 11(4), 959-975. <https://doi.org/10.1016/j.joi.2017.08.007>
4. Bhuiyan, N., Gerwin, D., & Thomson, V. (2004). Simulation of the New Product Development Process for Performance Improvement. *Management Science*, 50(12), 1690-1703. <https://doi.org/10.1287/mnsc.1040.0309>
5. Denison, D. R., Hart, S. L., & Kahn, J. A. (1996). From Chimneys to Cross-functional Teams: Developing and Validating a Diagnostic Model. *Academy of Management Journal*, 39(4), 1005-1023. <https://doi.org/10.2307/256721>
6. Donthu, N., Kumar, S., Mukherjee, D., Pandey, N., & Lim, W. M. (2021). How to Conduct a Bibliometric Analysis: An Overview and Guidelines. *Journal of Business Research*, 133, 285-296. <https://doi.org/10.1016/j.jbusres.2021.04.070>
7. Dussart, P., van Oortmerssen, L. A., & Albronda, B. (2021). Perspectives on Knowledge Integration in Cross-functional Teams in Information Systems Development. *Team Performance Management*, 27(3-4), 316-331. <https://doi.org/10.1108/TPM-11-2020-0096>
8. Edmondson, A. C., & Nembhard, I. M. (2009). Product Development and Learning in Project Teams: The Challenges are the Benefits. *Journal of Product Innovation Management*, 26(2), 123-138. <https://doi.org/10.1111/j.1540-5885.2009.00341.x>
9. Ehrhardt, K., Miller, J. S., Freeman, S. J., & Hom, P. W. (2014). Examining Project Commitment in Cross-Functional Teams: Antecedents and Relationship with Team Performance. *Journal of Business and Psychology*, 29(3), 443-461. <https://doi.org/10.1007/s10869-013-9325-6>
10. Foerstl, K., Hartmann, E., Wynstra, F., & Moser, R. (2013). Cross-functional Integration and Functional Coordination in Purchasing and Supply Management: Antecedents and Effects on Purchasing and Firm Performance. *International Journal of Operations and Production Management*, 33(6), 689-721. <https://doi.org/10.1108/IJOPM-09-2011-0349>

11. Fornell, C., & Larcker, D. F. (1981). Evaluating Structural Equation Models with Unobservable Variables and Measurement Error. *Journal of Marketing Research*, 18(1), 39-50.
12. Gargiulo, M., & Benassi, M. (2000). Trapped in Your Own Net? Network Cohesion, Structural Holes, and the Adaptation of Social Capital. *Organization Science*, 11(2), 183-196. <https://doi.org/10.1287/orsc.11.2.183.12514>
13. Gerwin, D., & Barrowman, N. J. (2002). An Evaluation of Research on Integrated Product Development. *Management Science*, 48(7), 938-953. <https://doi.org/10.1287/mnsc.48.7.938.2818>
14. Gerwin, D., & Moffat, L. (1997a). Authorizing Processes Changing Team Autonomy during New Product Development. *Journal of Engineering and Technology Management*, 14(3-4), 291-313. [https://doi.org/10.1016/S0923-4748\(97\)00013-1](https://doi.org/10.1016/S0923-4748(97)00013-1)
15. Gerwin, D., & Moffat, L. (1997b). Withdrawal of Team Autonomy During Concurrent Engineering. *Management Science*, 43(9), 1275-1287. <https://doi.org/10.1287/mnsc.43.9.1275>
16. Ghobadi, S., & D'Ambra, J. (2012). Knowledge Sharing in Cross-functional Teams: A Cooperative Model. *Journal of Knowledge Management*, 16(2), 285-301. <https://doi.org/10.1108/13673271211218889>
17. Henke, J. W., Krachenberg, A. R., & Lyons, T. F. (1993). Perspective: Cross-functional Teams: Good Concept, Poor Implementation! *Journal of Product Innovation Management*, 10(3), 216-229. [https://doi.org/10.1016/0737-6782\(93\)90027-N](https://doi.org/10.1016/0737-6782(93)90027-N)
18. Hoegl, M., Weinkauff, K., & Gemuenden, H. G. (2004). Interteam Coordination, Project Commitment, and Teamwork in Multiteam R&D Projects: A Longitudinal Study. *Organization Science*, 15(1), 38-55. <https://doi.org/10.1287/orsc.1030.0053>
19. Holland, S., Gaston, K., & Gomes, J. (2000). Critical Success Factors for Cross-functional Teamwork in New Product Development. *International Journal of Management Reviews*, 2(3), 231-259. <https://doi.org/10.1111/1468-2370.00040>
20. Kaufmann, L., & Wagner, C. M. (2017). Affective Diversity and Emotional Intelligence in Cross-functional Sourcing Teams. *Journal of Purchasing and Supply Management*, 23(1), 5-16. <https://doi.org/10.1016/j.pursup.2016.07.004>
21. Liao, J., O'Brien, A. T., Jimmieson, N. L., & Restubog, S. L. D. (2015). Predicting Transactive Memory System in Multidisciplinary Teams: The Interplay between Team and Professional Identities. *Journal of Business Research*, 68(5), 965-977. <https://doi.org/10.1016/j.jbusres.2014.09.024>
22. Love, J. H., & Roper, S. (2009). Organizing Innovation: Complementarities between Cross-functional Teams. *Technovation*, 29(3), 192-203. <https://doi.org/10.1016/j.technovation.2008.07.008>
23. Majchrzak, A., More, P. H. B., & Faraj, S. (2012). Transcending Knowledge Differences in Cross-functional Teams. *Organization Science*, 23(4), 951-970. <https://doi.org/10.1287/orsc.1110.0677>
24. McDonough, E. F. (2000). Investigation of Factors Contributing to the Success of Cross-Functional Teams. *Journal of Product Innovation Management*, 17(3), 221-235. <https://doi.org/10.1111/1540-5885.1730221>
25. Mitchell, R., & Boyle, B. (2015). Professional Diversity, Identity Salience and Team Innovation: The Moderating Role of Openmindedness Norms. *Journal of Organizational Behavior*, 36(6), 873-894. <https://doi.org/10.1002/job.2009>
26. Mitchell, R. J., Parker, V., & Giles, M. (2011). When do Interprofessional Teams Succeed? Investigating the Moderating Roles of Team and Professional Identity in Interprofessional Effectiveness. *Human Relations*, 64(10), 1321-1343. <https://doi.org/10.1177/0018726711416872>
27. Mukherjee, D., Lim, W. M., Kumar, S., & Donthu, N. (2022). Guidelines for Advancing Theory and Practice through Bibliometric Research. *Journal of Business Research*, 148, 101-115. <https://doi.org/10.1016/j.jbusres.2022.04.042>
28. Pérez-Luño, A., Bojica, A. M., & Golapakrishnan, S. (2019). When More is Less: The Role of Cross-functional Integration, Knowledge Complexity and Product Innovation in Firm Performance. *International Journal of Operations & Production Management*, 39(1), 94-115. <https://doi.org/10.1108/IJOPM-04-2017-0251>
29. Podsakoff, P. M., MacKenzie, S. B., & Podsakoff, N. P. (2012). Sources of Method Bias in Social Science Research and Recommendations on How to Control It. In *Annual Review of Psychology* (Vol. 63, pp. 539-569). <https://doi.org/10.1146/annurev-psych-120710-100452>

30. Tsuji, M., Ueki, Y., Shigeno, H., Idota, H., & Bunno, T. (2018). R&D and non-R&D in the innovation process among firms in ASEAN countries: Based on firm-level survey data. *European Journal of Management and Business Economics*, 27(2), 198-214. <https://doi.org/10.1108/EJMBE-02-2018-0030>
31. Van Der Vegt, G. S., & Bunderson, J. S. (2005). Learning and Performance in Multidisciplinary Teams: The Importance of Collective Team Identification. *Academy of Management Journal*, 48(3), 532-547. <https://doi.org/10.5465/amj.2005.17407918>
32. Van Knippenberg, D., & Schippers, M. C. (2007). Work Group Diversity. *Annual Review of Psychology*, 58, 515-541. <https://doi.org/10.1146/annurev.psych.58.110405.085546>
33. Zhao, X. (2022). Customer Orientation: A Literature Review Based on Bibliometric Analysis. *SAGE Open*, 12(1), 1-16. <https://doi.org/10.1177/21582440221079804>