Reverse Knowledge Transfer: Making Sense of Two Decades of Academic Research

Abstract

Purpose: Purpose of this study is to synthesise extant literature on reverse knowledge transfer built up over the past two decades with the help of bibliometric analysis and also suggest promising new areas for research.

Design/methodology/approach: Study adopts a literature review methodology combined with bibliometric and network analysis based on 117 papers identified from the Scopus database. In particular, this study has tried to identify and capture themes not previously fully captured or evaluated by other reviews on this topic.

Findings: We have identified research clusters and research gaps. Overall, the review shows the main outlets that have published papers on reverse knowledge transfer and the theoretical background this research is built on. Study exhibits the core topics that have persisted and grown consistently such as the *subsidiary's role in reverse knowledge transfer*. In addition, the review highlights less researched themes such as *role of reverse knowledge in reverse innovation*, which open exciting avenues for new research opportunities.

Research limitations/implications: This study reflects that RKT research has experienced remarkable growth from a complete viewpoint in recent years. There was a surge in publications from 2008 onwards, and many of the influential papers seemed to have been published between 2013 and 2018.

Originality/ value: To the best of the authors' knowledge, this is the first study to map, systematise, and discuss the literature concerned to the reverse knowledge transfer topic.

Keywords: reverse knowledge transfer; international knowledge transfer; knowledge spillover; co-citation; bibliometric analysis

1. Introduction

Increasingly, the role of the headquarters is changing. They are more involved on the receiving side than transferring of the knowledge to their globally dispersed subsidiaries (Ciabuschi *et al.,* 2010; 2012; Zhang *et al.,* 2019). No more subsidiary is treated as an inferior, its importance is increasing in parent-subsidiary network. Now, more and more parent companies are going abroad to seek knowledge. Earlier, the motive of the organisations was to expand the market but now they are going international not only to expand market but also to seek new capabilities, skills, technology, innovation and other knowledge. Now, subsidiaries play an important role in generation and transfer of knowledge to other sister units and parent organisation. Subsidiaries can collate professional, technological, and social-relations knowledge from different external sources and can offer access to these external capabilities and resources (Dunning, 1993; Najafi-Tavani *et al.,* 2012a; Del Giudice *et al.,* 2014). A relationship with external parties exposes subsidiaries to new ideas, practices, culture, and market and also helps them to develop new competencies (Najafi-Tavani *et al.,* 2012b). Additionally, it can transfer this knowledge back to sister subsidiaries and to parent company. The knowledge of technology, product, process, market, customers, government, suppliers, and competitors transfer from subsidiary to headquarter can bring some changes in product, policy, processes, and technology of the headquarter. This transfer of knowledge is termed as reverse knowledge transfer (Kumar, 2013). It further facilitates to achieve sustainable competitive advantage (Teece, 2000; Lee and Choi, 2003; Becerra-Fernandez and Sabherwal, 2014; Wong *et al.,* 2015; Downes and Marchant, 2016).

Knowledge transfer between subsidiary and parent is a major research topic in the area of international business (Alharbi and Singh, 2013). However, much focus has been on conventional knowledge transfer i.e. transfer of knowledge from parent to subsidiary (Dunning, 2001; 2009; Minbaeva, 2007; Vahlne and Johanson, 2014), as compared to reverse knowledge transfer (RKT) (Najafi-Tavani *et al.,* 2012, 2015; Kumar, 2013; Nair *et al.,* 2017).

Although the prominence of RKT is increasing in academic research given that this strengthens the competitive advantage of parent company, (Gupta and Govindarajan, 2000; Hakanson and Nobel, 2001; Ambos *et al.,* 2006; Criscuolo, 2009; Chung, 2014; Tseng, 2015, Li *et al.,* 2016) and this has attracted an increasing interest of scholars on this topic. Though, there is an increase in the research publications on this topic in the last five years covering various aspects

such as the antecedents, processes and consequences of R.T.K. (Nair *et al.* 2015, 2016; Kong *et al.*, 2018). But, most of the studies have focused only on some isolated aspects of the RKT and have failed to analyse the phenomenon in its totality (Pérez-Nordtvedt *et al.*, 2008). However, recent studies do not sufficiently capture the latest development of the RKT literature. Though, the topic is evolving and there are fruitful achievements regarding the importance of RKT for parent organisations but surprisingly, no comprehensive review has been conducted to provide scholars with an overview on the major findings, literature gaps, evolution of the topic, and future research directions.

Therefore, this study seeks to offer a broader review of research done in the RKT domain using bibliometric analysis (Gu *et al.*, 2021). With the increasing number of publications, bibliometric analysis has become a valuable approach for appraising the current status of RKT domain, identifying the seminal works done, and predicting future research directions. Therefore, through the bibliometric research we have tried to present the evolution of RKT domain, identifying influential authors of this field, important journals which published the research studies of this field, performed co-citation, and keyword analysis. We have considered research papers from the last two decades to observe the evolution of the RKT concept over time. From an academic perspective, it will help in classifying published literature on RKT and in following its advances and trends. For this purpose, a broad set of research papers were taken from the SCOPUS database and R language package bibliometrix was used on different units of analysis (authors, journals, universities, and countries). Particularly, in the performance evaluation part, we have referred to varied basic bibliometric indicators, such as the number of citations and collaboration of authors.

Bibliometric method has been used in various areas of research, such as international entrepreneurship (Baier-Fuentes *et al.*, 2018), service innovation (Sakata *et al.*, 2013; Klarin, 2019) and technological entrepreneurship (Ratinho *et al.*, 2015). There have been few studies in knowledge management area too (Gu, 2004b; Nonaka and Peltokorpi, 2006; Qiu and Lv, 2014; Serenko and Dumay, 2015; Gaviria-Marin *et al.*, 2019) although in the field of RKT, we believe this is the first study done using the bibliometric methodology.

Our study makes an effort to address this gap by performing a bibliometric analysis of the existing literature of RKT We have tried to present a comprehensive picture of how this topic has

evolved over the past two decades or so. It uses standard tools of bibliometric and network analysis to focus on role of important publications, researchers, and centers of research in RKT Network analysis is used to identify dominant and upcoming sub-themes in the area to focus on scope and structure of the field. This analysis is valuable for identifying the most influential papers, and identifying the main clusters of research streams within the RKT literature objectively while graphically demonstrating the growth of the field over time. It helps in recognising areas of existing research interests, and possible scope for future research. Basically, this study addresses the following research questions:

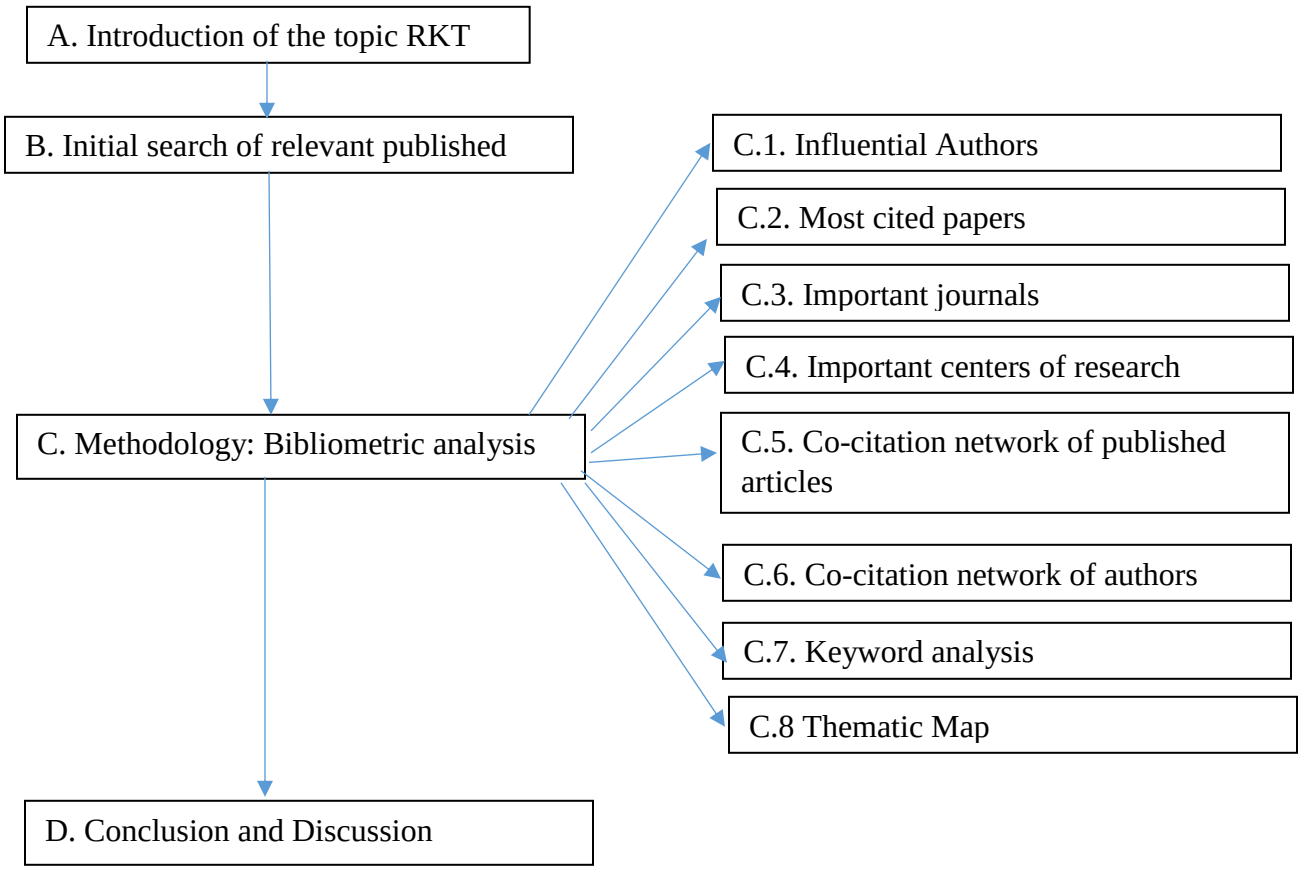
R.Q. 1: What is the current publication trend, most cited articles, most influential authors, and journals in RKT?

R.Q. 2: Which are the research centers/universities where major of the research work is done in the RKT domain?

R.Q. 3: How the collaboration for this domain of research among the authors has evolved over the period of time? Who are the leading collaborator authors in this domain of research?

R.Q. 4: Which research trends dominate RKT, and where is this domain RKT advancing? What are the key and potential areas for future research?

This study is structured as follows: section 2 focuses on a brief introduction of RKT with the help of well cited research papers, section 3 explains data and methodology, section 4 discusses results and findings, and section 5 concludes with the managerial implications, limitations and suggestions for future research directions. Below is the pictorial representation of the bibliometric analysis.



2. A brief review on reverse knowledge transfer

RKT has attracted a lot of attention from researchers (Michailova and Mustaffa, 2012; Rabbiosi and Santangelo, 2013; Del Giudice *et al.*, 2014; Jimenez-Jimenez, *et al.*, 2019). Through RKT parent firms seek specialised knowledge and superior competencies from their subsidiaries (Birkinshaw and Hood, 1998).

Previous research on RKT has focussed on its antecedents (Rabbiosi and Santangelo, 2013; Mudambi *et al.*, 2014; Nair *et al.*, 2015, 2016), barriers to the process of intra-firm knowledge transfer (Szulanski, 1996), determinants of RKT (Minbaeva, 2007), and subsidiary roles in RKT (Rabbiosi, 2011). Whereas, later focus of scholars shifted towards benefits of RKT (Rabbiosi and Santangelo, 2013; Nair *et al.*, 2018), role of repatriates (Sanchez-Vidal *et al.*, 2018), comparison between conventional knowledge transfer and RKT (Yang *et al.*, 2008), RKT process (Kumar, 2013; Kogut and Mello, 2017), how RKT facilitates technology transfer (Millar and Choi, 2009)

and innovations in multinationals (Jiménez-Jiménez *et al.,* 2019). But none of the above mentioned studies have presented a comprehensive literature review.

RKT helps multinationals in better coordinating their global strategies (Rabbiosi, 2011), improving capabilities and in development of new products, processes, services, and technologies (Ambos *et al.*, 2006; Tallman and Koza, 2010). It helps emerging economy multinationals to better understand global markets and exercise better control over their subsidiaries (Rabbiosi, 2011). Knowledge gained from subsidiaries help other sister units to improve performance by enhancing their technological and market prowess (Gnyawaḷi and Singal, 2009). Parent company can also transfer much-needed knowledge to their subsidiaries (Criscuolo and Narula, 2007; Phene and Almeida, 2008). Transfer of knowledge from subsidiaries help parent firms to identify where and what capabilities are available with respective subsidiaries (Rugman and Verbeke, 2001).

Kogut and Mello (2017) have made an attempt by performing a systematic review. However, it lacked a complete and comprehensive approach. The topic is at a very nascent stage, thus, a comprehensive review, with focus on major contribution, and future research areas will provide a direction to the academicians. It will also enhance the understanding of the topic.

3. Data and methodology

3.1 Data

Initial Search

By performing a search based on "title, abstract, keywords" in the Scopus database, we collected bibliographic and citation information on the past published works in the area of RKT We downloaded the search results in both excel (.csv) and BibTeX (.bib) formats to encompass all relevant research papers comprising authors' names and affiliations, paper titles, abstracts, keywords, citations, and references cited by those papers. The keywords used for data collection included: *reverse knowledge, reverse knowledge flow, reverse knowledge spillover, reverse knowledge acquisition, and reverse technology transfer*. Our search was limited to the subject area of '*Business*' with language as "*English*" in the Scopus database, we considered conference papers, research articles, book chapters, editorials, and review papers published only in English for this study. Any important papers which were omitted initially were then identified and included via a backward search method. Eventually, we aggregated a total of 117 research papers for analysis. We present this process of systematic data collection and analysis in Table 1.

Table 1: Process of data collection and analysis

Step No.	Description		Notes
1	Search for keywords relating to reverse knowledge transfer in the Scopus database	1	**Searched in**: Titles, abstracts and keywords
		2	**Search string**: reverse knowledge OR reverse knowledge transfer OR reverse knowledge flow OR reverse knowledge spillover OR reverse knowledge acquisition OR reverse technology transfer OR reverse technology flow
2	Results from step 1 are filtered based on discipline and language		**Search limited to** SUBJAREA," BUSI" AND LANGUAGE, "English". Finally we got 123 papers.
3	The resultant dataset from step 2 is manually examined		Here, papers included in the dataset but not related to our theme were removed. Total number of papers came to 105.
4	Search on Google Scholar is carried out for any other manuscripts pertaining to reverse knowledge transfer	1	We identified any important papers that were not included in the Scopus dataset, and they were added.
		2	The final dataset had 117 papers after step 4
5	Data is aggregated for various units of analyses		Classification and aggregation of data into summary tables was carried out
6	Clustered networks are drawn linking various units of analyses		Networks of citation and co-occurrence relationships are drawn along with node clusters.

3.2 Methodology

In the first step, we collected the relevant data with the help of the Scopus database. In the second step, the data is analysed in terms of prominent authors in the RKT domain, their countries of work, articles, journals, affiliated universities etc. Finally, the results observe interrelationships like co-citation, collaboration and co-occurrence amongst different units of analysis. These relations are visualised as networks where the authors, papers etc., appear as nodes and the connections between nodes are drawn as linkages between them. Network analysis allocates the nodes to two or more clusters. These clusters depend on the basic principle that nodes in a cluster should be akin to each other and differ from those in a different cluster.

We used the R language package *bibliometrix* (Aria and Cuccurullo, 2018) because it is written in the open-source R language. It is possible to perform custom data analyses, unlike other proprietary software. To do the network analyses and draw out the figures, we used the VOSviewer software (Eck and Waltman, 2010; Shah *et al.,* 2019).

4. Results and Discussion

Research papers published between 1984 to 2020 are taken in account. Table 2 shows the descriptive information of papers published on RKT From the table 2, first, we can observe that 91 articles were journal articles, 10 were book chapters, 10 were conference papers, 1 was editorial, and 5 were the review papers. Second, single-authored papers were less (only13) in numbers as compared to multi-author studies.

Table 2: Summary information from data: RKT

Timespan	1984 : 2020
Sources (Journals, Books, etc.)	47
Documents	117
Average years from publication	8.03
Average citations per documents	26.45
Average citations per year per doc	2.95
References	3550
Article	91
book chapter	10
conference paper	10
Editorial	1
Review	5
Keywords Plus	146
Author's Keywords	156
Authors	129
Author Appearances	277
Authors of single-authored documents	13
Authors of multi-authored documents	116
Single-authored documents	26
Documents per Author	0.91
Authors per Document	1.1
Co-Authors per Documents	2.37

4.1. Growth of research on RKT

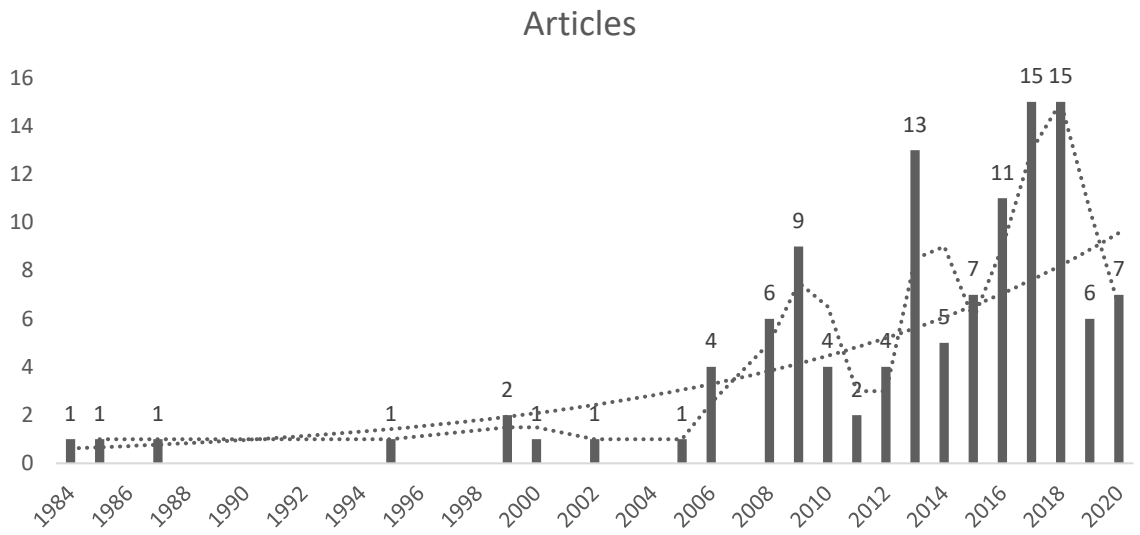


Figure 1: Growth of literature on RKT

To increase the understanding of the topic it is prudent to understand the origin of the topic. The concept RKT, was first discussed by Mansfield and Romeo (1984), when they throw light on how US-based parent organisations can be benefitted by transfer of technology from their overseas subsidiaries. This diverted the attention of the scholars that subsidiary can not only act as the receiver of knowledge but can also transfer back the knowledge to sister units and parent firm. Gradually, the stream flourished and scholars explored other factors impacting RKT such as impact of culture in RKT (Kogut & Singh, 1988), extent to which a subsidiary is user and provider of knowledge (Gupta & Govindarajan, 1991), transfer of knowledge held at individual level (Kogut & Zander, 1992), tacit knowledge and RKT (Szulanski, 1996), firm structure (Teece, 2000) and social structure (Tsai, 2002), subsidiary roles (Ambos & Birkinshaw, 2010), embeddedness (Froese, et al., 2020), etc. Thus, RKT as a field has seen evolution from transferring only technology knowledge to transferring back other types of knowledge such as product, customer, market, process, etc. The focus has also shifted from organisation to individuals in RKT for emerging economies.

Fig. 1 exhibits the trend in number of articles published in RKT field. Though, the field is in early stage of growth and expansion era, these trends supports a geometric growth is happening in publications. The above figure indicates a surge in papers published from 2008. The period from 2016 to 2018 saw the most number of publications so far. In fact, the period from 2016 to 2018 is

just the time when scholars discussed about benefits of RKT for parent firms (Nair *et al.,* 2018), RKT in emerging economy context is attracting scholars' attention (Nair *et al.,* 2016, Silveira *et al.,* 2017; Fu *et al.,* 2018). Now, focus is shifting from organisation to individuals; and some studies also discussed the role of expatriates in RKT (Kong, *et al.,* 2018; Sanchez-Vidal *et al.,* 2018). This is also the time when reverse innovation (Borini *et al.,* 2016) and reverse technology transfer (Wolfram *et al.,* 2018) started attracting attention of scholars as well as industry practioners.

4.2. Most influential authors on RKT

The most influential authors in RKT domain helped us to identify the group of authors, who have done prominent work in this research domain. They are the pioneers for the evolution and development of this domain. This will help upcoming researchers and practitioners to collaborate with these influential authors. Table 3 presents significant authors who have done seminal work in the RKT domain.

As discussed in the previous section, there is an increase in publications on RKT from 2008 onwards. This has been possible because of the growing interest of the scholars in this area. Though, RKT as a field is still evolving but there are only few authors who have made major contribution to the field so far. For example, *Ambos B and Ambos T.C.* focused on benefits of RKT for parent organisations, role of distance, and assigned subsidiary roles in RKT *Kogut* tried to explain RKT based on different theories such as knowledge based view, resource based view, etc. Moreover, *Mudambi and Nair* shifted the context of RKT from developed to developing economies. *Rabbiosi* discussed and explored the need of RKT These authors helped this stream to evolve. They diverted the attention of the academicians and practitioners toward the various aspects of RKT Table 3 outlines top 15 authors who have contributed the most, the number of articles published by them, and the number of citations each has received. Most of them are European authors.

Table 3: Most important authors in RKT

	Authors	Articles	Authors	Citations
1	Demirbag M	9	Mudambi R	564
2	Mellahi K	7	Rabbiosi L	498
3	Nair SR	7	Ambos B	488

4	Rabbiosi L	6	Ambos TC	488
5	Sanz-Valle R	6	Schlegelmilch BB	488
6	Hamida LB	5	Meyer KE	468
7	Meyer KE	5	Yang Q	396
8	Ciabuschi F	4	Demirbag M	296
9	Giroud A	4	Corredoira RA	260
10	Kogut CC	4	Rosenkopf L	260
11	Kong L	4	Mellahi K	228
12	Martnez-Costa M	4	Nair SR	228
13	Mudambi R	4	Piscitello L	168
14	Najafi-Tavani Z	4	Frost TS	157
15	Peltokorpi V	4	Zhou C	157

It is observed from Table 3 that Demirbag M has published the maximum number of research articles followed by Mellahi K, and Nair SR. Whereas, Mudambi tops the list on the basis of citations received (564 citiation), followed by Rabbiosi (498 citations). Highest citations received by Mudambi's work indicates that his research work has more influence in this domain. It is noticeable that authors with more articles may not necessarily have received more citations, such as Mudambi has published only 4 articles but has received the maximum number of citations.

4.3. Most cited papers on RKT

As mentioned in the previous section about the authors who have contributed most to RKT field, this section throws light on the top papers of these authors. Table 4 exhibits top 15 research studies, their publication year, and their citation received.

From the table 4 we can observe that Ambos *et al.*, (2006) is the most cited paper and published in International Business Review journal. It is a quantitative paper and one of the first papers to capture the benefits of RKT for parent organisations. Though, the study was done in a developed economy context but it formed the basis for many varied RKT studies. Yang *et al.*, (2008) is the second most cited paper and published in Journal of Management. This study attempted to compare conventional knowledge and RKT Third most cited paper is of Frost and Zhou (2005), published in Journal of International Business Studies, which has focused on reverse technology transfer. A notable finding is that major contribution to the RKT research field is made by European authors. Other prominent studies can be observed from table 4.

Table 4: Most influential papers in RKT

	Title	Authors	Year	Journal	Citations
1	Learning from foreign subsidiaries: an empirical investigation of headquarters' benefits from reverse knowledge transfers	Ambos TC; Ambos B; Schlegelmilch BB	2006	International Business Review	244
2	Conventional and reverse knowledge flows in multinational corporations	Yang Q; Mudambi R; Meyer KE	2008	Journal Of Management	198
3	R and d co-practice and 'reverse' knowledge integration in multinational firms	Frost TS; Zhou C	2005	Journal Of International Business Studies	157
4	Should auld acquaintance be forgot? The reverse transfer of knowledge through mobility ties	Corredoira RA; Rosenkopf L	2010	Strategic Management Journal	130
5	Subsidiary roles and reverse knowledge transfer: an investigation of the effects of coordination mechanisms	Rabbiosi L	2011	Journal Of International Management	93
6	Reverse knowledge transfer in M.N.E.s: subsidiary innovativeness and entry modes	Mudambi R; Piscitello L; Rabbiosi L	2014	Long Range Planning	84
7	Parent company benefits from reverse knowledge transfer: the role of the liability of newness in M.N.E.s	Rabbiosi L; Santangelo GD	2013	Journal Of World Business	72
8	Mediating effects in reverse knowledge transfer processes: the case of knowledge-intensive services in the U.K.	Najafi-Tavani Z; Giroud A; Sinkovics RR	2012	Management International Review	46
9	Reverse knowledge transfer from overseas acquisitions: a survey of Indian M.N.E.s	Nair Sr; Demirbag M; Mellahi K	2015	Management International Review	42
10	Inter-firm reverse technology transfer: the home country effect of RandD internationalization	Criscuolo P	2009	Industrial And Corporate Change	35
11	Reverse knowledge transfer in emerging market multinationals: the Indian context	Nair Sr; Demirbag M; Mellahi K	2016	International Business Review	34
12	Towards a multi-perspective model of reverse knowledge transfer in multinational enterprises: a case study of coats plc	Mcguinness M; Demirbag M; Bandara S	2013	European Management Journal	34
13	Corporate language proficiency and reverse knowledge transfer in multinational corporations: interactive effects of communication media richness and commitment to headquarters	Peltokorpi V	2015	Journal Of International Management	29
14	'Reverse' transfers of technology from overseas subsidiaries to American firms.	Mansfield E; Romeo A	1984	Ieee Transactions On Engineering Management	28
15	Oral rehydration therapy: reverse transfer of technology	Santosham M	2002	Archives Of Pediatrics And Adolescent Medicine	25

4.4.Most important journals on RKT

As discussed in previous two sections, certain authors have contributed more as compared to others. Similarly, though RKT based papers have been published by them in various journals but there are some journals which have more focus on RKT based studies. A list of those journals is given in table 5.

Table 5 shows that the top 15 journals have published sixty-two papers i.e. 52% of all papers taken into account for study. Again the journals with more papers may not be the ones with more citations. *Journal of World Business* has maximum papers whereas *International Business Review* has maximum citations. Some of the most cited papers such as Ambos and Ambos (2006) and Nair *et al.,* (2016) papers are published with *International Business Review* which explains the greater number of citations received.

Table 5: Most important journals in RKT

	Journal	Papers	Journal	Citations
1	Journal of World Business	7	International Business Review	556
2	Management International Review	7	Journal of Management	396
3	Journal of Business Research	6	Management International Review	260
4	European Journal of Innovation Management	5	Strategic Management Journal	260
5	British Journal of Management	4	Journal of World Business	256
6	Canadian Journal of Administrative Sciences	4	Journal of International Management	244
7	International Business Review	4	Journal of International Business Studies	197
8	Journal of Intellectual Capital	4	Long Range Planning	168
9	Journal of International Management	4	Journal of Business Research	96
10	Advances in International Management	3	European Management Journal	68
11	Industrial and Corporate Change	3	Industrial and Corporate Change	53
12	International Journal of Technology Management	3	International Journal of Technology Management	48
13	Journal of International Business Studies	3	Journal of Knowledge Management	46
14	Thunderbird International Business Review	3	Research Policy	46
15	19th International Conference on Industrial Engineering and Engineering Management: Management System Innovation	2	British Journal of Management	38

4.5. Important institutions for research on RKT

Table 6 identifies top performing universities in terms of citations received. *Temple University*, *Copenhagen Business School*, and *University of Edinburgh* are represented respectively by well-known authors such as *Mudambi*, *Rabbiosi*, and *Ambos*. Thus, an institution may have gained top ranking because of contribution of one or two scholars. Looking at the number of citations we can say that they are not only prolific, but make major contributions through the papers they published. Out of these top 15 institutions, barring Peking University, other institutions are either from Europe or United States. This reflects that Asian institutions are lacking behind in RKT research.

Table 6: Most important institutions for research in RKT

	Institution	Citations
1	Temple University	564
2	Copenhagen Business School	498
3	University Of Edinburgh	488
4	Vienna University Of Economics And Business Administration	488
5	Robert Morris University	396
6	University Of Bath	396
7	Peking University	356
8	University Of Western Ontario	314
9	University Of Sheffield	262
10	University Of Maryland	260
11	University Of Pennsylvania	260
12	University Of Warwick	228
13	University Of Strathclyde	194
14	Politecnico Di Milano	168
15	University Of Reading Business School	168

If we look at a country-wise breakdown of these institutions (Table 7), most universities belong to the geographical regions of United Kingdom, Denmark, and Austria. The *U.K.* has maximum citations of 808 but average article citations are most for *Austria*. Among emerging economies, China, Sri Lanka, Brazil, and Georgia are major contributors with China having maximum average article citations. Below table reflects that the U.K. tops the list with average article citations of 42.53.

Table 7: Most influential countries doing research in RKT

	Country	Total Citations	Average Article Citations
1	United Kingdom	808	42.53
2	Denmark	498	83.00
3	Austria	488	244.00
4	Canada	259	43.17
5	China	130	8.67
6	Australia	74	18.50
7	USA	73	14.60
8	Sri Lanka	68	34.00
9	Sweden	64	16.00
10	Japan	63	21.00
11	Netherlands	54	13.50
12	Spain	44	5.50
13	Brazil	36	4.50
14	Korea	21	7.00
15	Georgia	11	11.00

4.6. Co-citation network of published articles

In previous sections, we identified influential authors, most cited studies, highly cited journals, and universities where most of these works are done. But from these finding we are not able to observe the collaborations among the authors. Thus, in this section we presented co-citation analysis of published articles which further help us to identify the collaboration among the authors.

Co-citation analysis examines the co-citation intensity among the two articles. This intensity is measured by the number of papers which refer to both papers together. Co-cited publications are those which appear together in the reference lists of other studies (Leydesdorff, 2011).

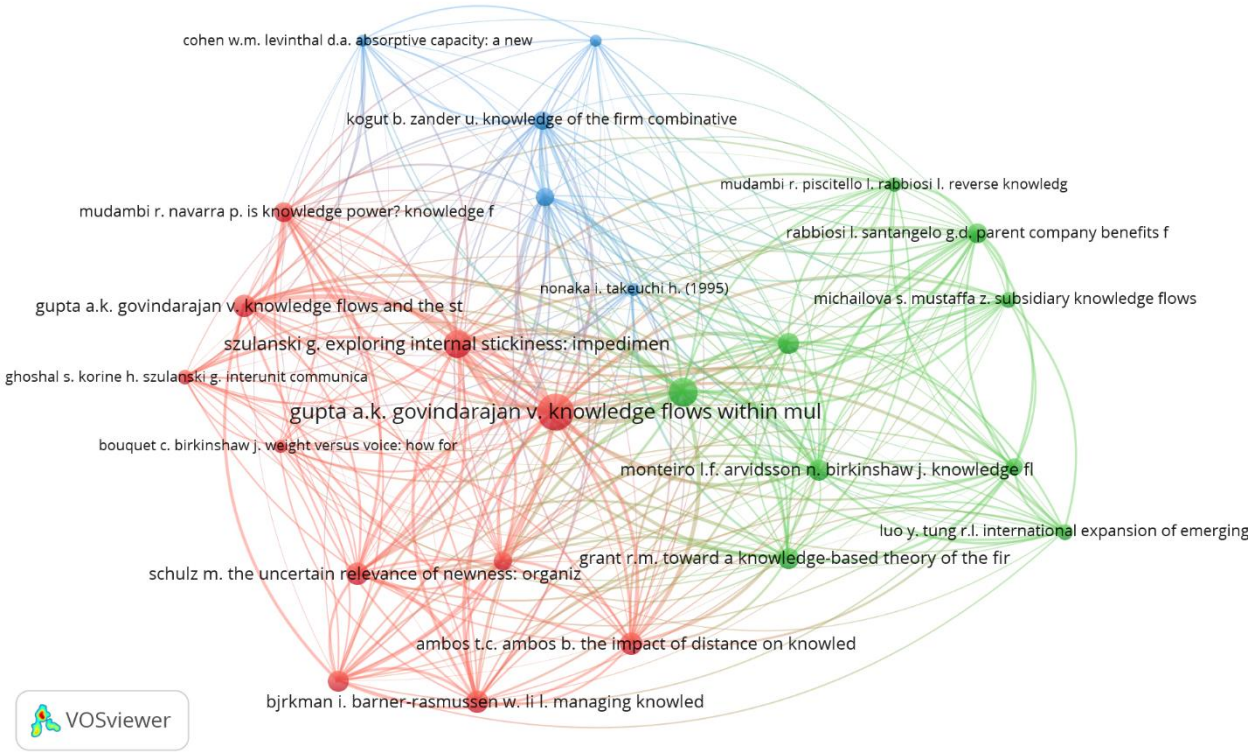


Figure 2: Co-citation network of articles on RKT

Figure 2 represents the co-citation network for RKT Co-citation network analyses the relationships or interaction between two research studies (Radicchietal *et al.,* 2004). Co-citation occurs when two research studies are cited in a third study and the first study is being referred as 'co-cited'. Network articles are denoted by nodes (represented by the circles, see figure 2), and cluster is a group of closely-connected studies in a research field (Radicchi *et al.,* 2004). The findings of co-citation network represent three different clusters indicated by three different colors, i.e., blue, green and red. Each cluster signifies a domain/area of study in RKT The distance between two nodes signifies how similar or different they are; i.e., the nodes located closely represent a higher intensity of similarity, while the nodes which are located farther signify a low intensity of similarity (Leydesdorff, 2011).

Table 8: Article co-citation network and clusters

Cluster	Authors	Year of publication	Paper	Journal	Themes

1	Kogut, B., and Singh, H.	1988	The effect of national culture on the choice of entry mode	Journal of international business studies,	Determinants of Reverse Knowledge Transfer
	Gupta, A. K., and Govindarajan, V.	1991	Knowledge flows and the structure of control within multinational corporations	Academy of management review,	
	Ghoshal, S., Korine, H., and Szulanski, G.	1994	Inter-unit communication in multinational corporations	Management science	
	Szulanski, G.	1996	Exploring internal stickiness: impediments to the transfer of best practice within the firm	*Strategic management journal*,	
	Tsai, W., and Ghoshal, S.	1998	Social capital and value creation: the role of intrafirm networks	*Academy of management Journal*,	
	Gupta, A. K., and Govindarajan, V.	2000	Knowledge flows within multinational corporations	*Strategic management journal*,	
	Schulz, M.	2001	The uncertain relevance of newness: organisational learning and knowledge flows	*Academy of management journal*	
	Björkman, I., Barner-Rasmussen, W., and Li, L	2004	Managing knowledge transfer in M.N.C.s: the impact of headquarters control mechanisms	*Journal of international business studies*	
	Bouquet, C., and Birkinshaw, J.	2008	Weight versus voice: how foreign subsidiaries gain attention from corporate headquarters	*Academy of Management journal*	
	Ambos, T. C., and Ambos, B.	2009	The impact of distance on knowledge transfer effectiveness in multinational corporations	*Journal of International Management*,	
	Mudambi, R., and Navarra, P.	2015	Is knowledge power? Knowledge flows subsidiary power and rent-seeking within M.N.C.s	*The eclectic paradigm*	
2	Grant, R. M.	1996	Toward a knowledge-based theory of the firm	*Strategic management journal*	Significance of Reverse Knowledge Transfer
	Ambos, T. C., Ambos, B., and Schlegelmilch, B. B.	2006	Learning from foreign subsidiaries: an empirical investigation of headquarters benefits from reverse knowledge transfers	*International Business Review*,	
	Luo, Y., and Tung, R. L.	2007	International expansion of emerging market enterprises: a springboard perspective	*Journal of International Business Studies*	
	Monteiro, L. F., Arvidsson, N., and Birkinshaw, J.	2008	Knowledge flows within multinational corporations: Explaining subsidiary isolation and its performance implications	*Organisation Science*	
	Yang, Q., Mudambi, R., and Meyer, K. E.	2008	Conventional and reverse knowledge flows in multinational corporations	*Journal of Management*	

	Rabbiosi, L.	2011	Subsidiary roles and reverse knowledge transfer: An investigation of the effects of coordination mechanisms	*Journal of International Management*	
	Michailova, S., and Mustaffa, Z.	2012	Subsidiary knowledge flows in multinational corporations: Research accomplishments, gaps, and opportunities	*Journal of World Business*	
	Rabbiosi, L., and Santangelo, G. D.	2013	Parent company benefits from reverse knowledge transfer: The role of the liability of newness in M.N.E.s	*Journal of World Business*	
	Mudambi, R., Piscitello, L., and Rabbiosi, L.	2014	Reverse knowledge transfer in M.N.E.s: subsidiary innovativeness and entry modes.	*Long Range Planning*	
3	Cohen, W. M., and Levinthal, D. A.	1990	Absorptive capacity: A new perspective on learning and innovation.	*Administrative science quarterly*	Theoretical foundation
	Kogut, B., and Zander, U.	1992	Knowledge of the firm, combinative capabilities, and the replication of technology	*Organisation science*	
	Kogut, B., and Zander, U.	1993	Knowledge of the firm and the evolutionary theory of the multinational corporation	*Journal of international business studies*	
	Nonaka, I., and Takeuchi, H.	1995	*The knowledge-creating company: How Japanese companies create the dynamics of innovation*.	Oxford university press	

Table 8 summarises the three clusters in the author co-citation network which we have identified. *Cluster one (red color)* has 11 significant studies and is also the biggest cluster among co-citation network. Cluster has stronger focus on determinants of RKT (such as *distance*, *structure control*, *national culture* and *social capital);* benefits of RKT for parent organisations, causes or hindrances; and difference between the conventional knowledge and the RKT Other minor focuses were role of social capital and absorptive capacity in RKT These studies stress more on the parent firm's view and were based in developed economies.

The previous cluster was focused more on parent perspective while *second cluster (green color)* is medium sized with 8 studies. It focuses on subsidiary's perspective and significance of RKT for parent firm. The studies in cluster two put the subsidiary in a dominant role and focuses on role of subsidiaries in transfer of knowledge. Studies of this cluster have also tried to differentiate between conventional knowledge and RKT (Yang *et al.* 2008). Cluster two also focuses on how subsidiaries help parent firms based in emerging economies to gain access to

various knowledge resources and how technology facilitated the flow of knowledge from subsidiary to parent. This cluster also highlights the importance of innovativeness and age of subsidiary in RKT

The *third cluster (blue color)* has focus on theory development and conceptual analysis. This cluster highlights knowledge as one of the main resources that any organisation seeks. It further explains that RKT has its root in knowledge-based view, which is inspired by resource-based theory. This cluster includes one of the most cited studies (Ambos and Ambos, 2006) which has popularised the RKT as concept. Other focuses were importance of absorptive capacity and why some companies are more benefitted than other from knowledge transfer. Though, scholars have not been able to zeroed down on one theory to study RKT but still this cluster throws some light on the theoretical grounding of the topic.

4.7. Co-citation network of authors

Co-citation network recognises the research areas in RKT domain and it helps to analyse recent changes and trends. Two studies are said to be co-cited if both cite the same third study, i.e., there is a commonality in the list of the references of the studies, with a higher commonality of the studies represents a stronger co-citation (Caviggioli and Ughetto, 2019; Khanra *et al.,* 2020). The outcomes of the co-citation analysis technique help in identifying where the main thematic strands in the literature on a topic are growing (Xu *et al.,* 2018; Khanra *et al.,* 2020). The main authors, their significant studies and themes derived from each cluster are presented in Table 9, while Fig. 3 illustrates how the six major clusters have evolved in varied directions. We have further explained each cluster in detail below.

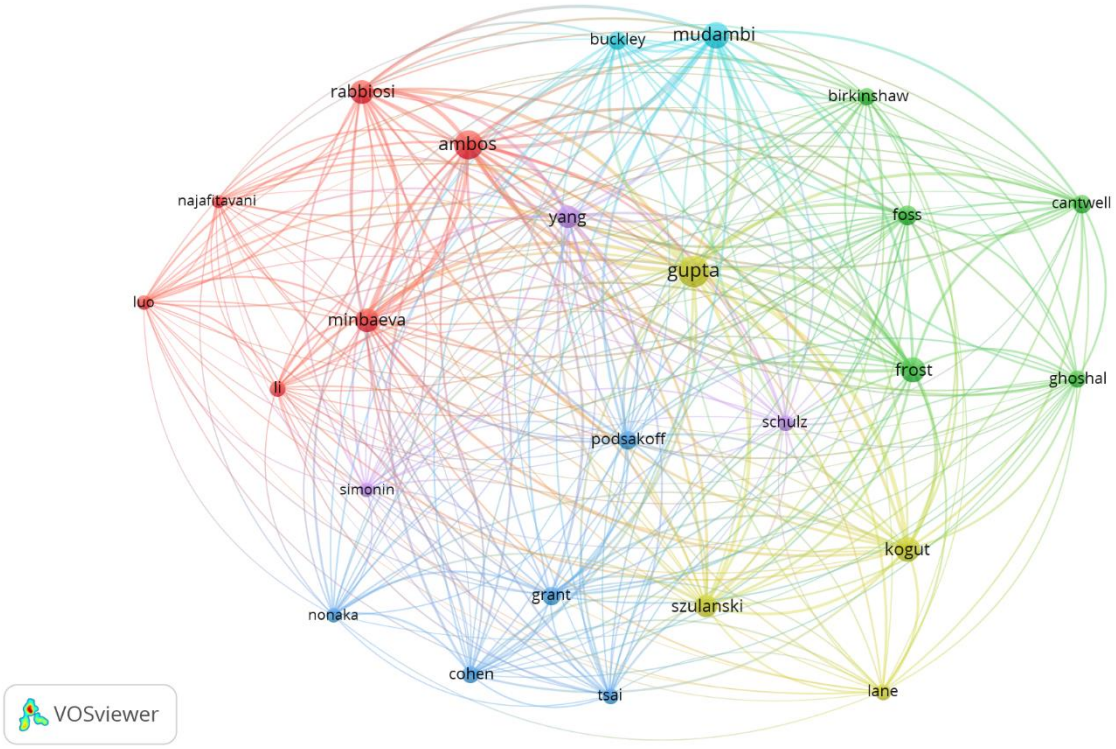


Figure 3: Co-citation network of authors

Table 9: Author co-citation network

Cluster	Author	Important Papers	Subject of paper	Cluster theme(s)
1	Ambos	1. Ambos T.C. Ambos B. The Impact Of Distance On Knowledge Transfer Effectiveness In Multinational Corporations (2009) 2. Ambos T.C. Ambos B. Schlegelmilch B.B. Learning From Foreign Subsidiaries: An Empirical Investigation Of Headquarters Benefits From Reverse Knowledge Transfers (2006)	parent company benefits, learning from subsidiaries, headquarter control, subsidiary innovativeness, emerging market enterprises	Benefits of reverse knowledge transfer
	Rabbiosi	1. Rabbiosi L. Subsidiary Roles And Reverse Knowledge Transfer: An Investigation Of The Effects Of Coordination Mechanisms (2011) 2. Rabbiosi L. Santangelo G.D. Parent Company Benefits From Reverse Knowledge Transfer: The Role Of The Liability Of Newness In Mnes (2013) 3. Mudambi R. Piscitello L. Rabbiosi L. Reverse Knowledge Transfer In Mnes: Subsidiary Innovativeness And Entry Modes (2014)		
	Minbaeva	Minbaeva, D., Knowledge Transfer In Multinational Corporations (2007) Management International Review, 47, Pp. 567-593		
	Li	1. Bjrkman I. Barner-Rasmussen W. Li L. Managing Knowledge Transfer In Mncs: The Impact Of Headquarters Control Mechanisms (2004)		
	Luo	1. Luo Y. Tung R.L. International Expansion Of Emerging Market Enterprises: A Springboard Perspective (2007)		
	Najafitavani	Najafi-Tavani, Z., Giroud, A., and Sinkovics, R. R. (2012). Mediating Effects In Reverse Knowledge Transfer Processes. Management International Review, 52(3), 461-488.		
2	Frost	Frost, T., The Geographic Sources Of Foreign Subsidiaries' Innovation (2001) Strategic Management Journal, 22, Pp. 101-123	foreign subsidiaries' innovation, subsidiary knowledge,	Subsidiary role in reverse
	Foss	Foss, N.J., Pedersen, T., Transferring Knowledge In Mncs: The Role Of Sources Of Subsidiary Knowledge And Organizational Context (2002) J. Int. Manag, 8, Pp. 49-67		

	Cantwell	Cantwell, J., (1989) Technological Innovation And Multinational Corporations, , Blackwell: New York	attention from headquarter, Subsidiary isolation, intrafirm networks, inter-unit communication	knowledge transfer
	Birkinshaw	1. Bouquet C. Birkinshaw J. Weight Versus Voice: How Foreign Subsidiaries Gain Attention From Corporate Headquarters (2008) 2. Monteiro L.F. Arvidsson N. Birkinshaw J. Knowledge Flows Within Multinational Corporations: Explaining Subsidiary Isolation And Its Performance Implications (2008)		
	Ghoshal	1. Tsai W. Ghoshal S. Social Capital And Value Creation: The Role Of Intrafirm Networks (1998) 2. Ghoshal S. Korine H. Szulanski G. Interunit Communication In Multinational Corporations (1994)		
3	Podsakoff	Podsakoff, P.M., Organ, D.W., Self-Reports In Organizational Research: Problems And Prospect (1986) Journal of Management, 12 (4), Pp. 531-544	Knowledge-based theory, absorptive capacity, social capital	Theoretical underpinning
	Grant	1. Grant R.M. Toward A Knowledge-Based Theory Of The Firm (1996)		
	Cohen	1. Cohen W.M. Levinthal D.A. Absorptive Capacity: A New Perspective On Learning And Innovation (1990)		
	Tsai	1. Tsai W. Ghoshal S. Social Capital And Value Creation: The Role Of Intrafirm Networks (1998)		
	Nonaka	1. Nonaka, I., and Takeuchi, H. (1995). The knowledge-creating company*: How Japanese companies create the dynamics of innovation.* Oxford university press		
4	Gupta	1. Gupta A.K. Govindarajan V. Knowledge Flows Within Multinational Corporations (2000) 2. Gupta A.K. Govindarajan V. Knowledge Flows And The Structure Of Control Within Multinational Corporations (1991)	structure of control, national culture, combinative capabilities, stickiness of knowledge, absorptive capacity, inter-organisational learning	Facilitators of reverse knowledge transfer
	Kogut	1. Kogut B. Singh H. The Effect Of National Culture On The Choice Of Entry Mode (1988) 2. Kogut B. Zander U. Knowledge Of The Firm And The Evolutionary Theory Of The Multinational Corporation (1993) 3. Kogut B. Zander U. Knowledge Of The Firm Combinative Capabilities And The Replication Of Technology (1992)		
	Szulanski	1. Szulanski G. Exploring Internal Stickiness: Impediments To The Transfer Of Best Practice Within The Firm (1996) 2. Ghoshal S. Korine H. Szulanski G. Interunit Communication In Multinational Corporations (1994)		
	Lane	Lane, P.J., Lubatkin, M., Relative Absorptive Capacity And Interorganizational Learning (1998) Strategic Management Journal, 19, Pp. 461-477		
5	Schulz	Schulz M. The Uncertain Relevance of Newness: Organizational Learning and Knowledge Flows (2001)	Knowledge flow, ambiguity, organisational learning, knowledge transfer in strategic alliances	Knowledge transfer process in alliances
	Yang	Yang Q. Mudambi R. Meyer K.E. Conventional And Reverse Knowledge Flows In Multinational Corporations (2008)		
	Simonin	Simonin, B.L., Ambiguity And The Process Of Knowledge Transfer In Strategic Alliances (1999) Strategic Management Journal, 20 (7), Pp. 595-623; Simonin, B.L., An Empirical Investigation Of The Process Of Knowledge Transfer In International Strategic Alliances (2004) Journal Of International Business Studies, 35 (5), Pp. 407-427		
6	Mudambi	1. Mudambi R. Navarra P. Is Knowledge Power? Knowledge Flows Subsidiary Power And Rent-Seeking Within Mncs (2015) 23. Mudambi R. Piscitello L. Rabbiosi L. Reverse Knowledge Transfer In Mnes: Subsidiary Innovativeness And Entry Modes (2014)	knowledge acquisition, knowledge accession, entry modes, knowledge transfer in M.N.E.s	Subsidiary characteristics
	Buckley	Buckley, P.J., Glaister, K., Klijn, E., Tan, H., Knowledge Accession And Knowledge Acquisition In Strategic Alliances: The Impact Of Supplementary And Complementary Dimensions (2009) British Journal Of Management, 20, Pp. 598-609		

The *first cluster (red color)* is the largest cluster and consists of 6 authors. Main authors of this cluster are Ambos and Rabbiosi. Cluster focuses on benefits of RKT (Ambos *et al.,* 2006; Minbaeva, 2007: Rabbiosi and Santangelo, 2013), subsidiary roles (Rabiossi, 2011) and power (Najafi-Tavani *et al.*, 2015) in RKT, headquarters control mechanism (Bjorkman, *et al.*, 2004),

and why emerging economy multinationals go abroad (Luo and Tung, 2007). These authors have focused on how learnings from subsidiaries help parent companies and emergence of emerging economy multinationals in RKT field. *Rabbiosi* has maximum publications in this cluster.

The second largest cluster is the *cluster two (green color)* and has five authors. Main contributors are Birkinshaw and Ghoshal, with maximum publications by Birkinshaw. Authors have focused on role of subsidiary in RKT, subsidiary's innovation (Frost, 2001), subsidiary knowledge (Foss, 2002) and subsidiary's isolation (Monteiro *et al.,* 2008). Further, authors have also focused on how subsidiaries gain attention from corporate headquarters (Bouquet and Birkinshaw, 2008), role of intra-firm networks (Tsai and Ghoshal, 1998), and inter-unit communication (Ghoshal et al., 1994) in RKT This cluster focuses on subsidiaries perspective and their significance in RKT

The *third cluster (blue color)* has 5 authors with focus on theoretical grounding. Authors have discussed problems associated with self-report data collection method (Podsakoff and Organ, 1986), influence of knowledge-based view (Grant, 1996), role of absorptive capacity (Cohen and Levinthal, 1990), social capital in inter-unit resource exchange (Tsai and Ghoshal, 1998), and knowledge in innovation and organisation survival (Nonaka and Takeuchi, 1995). This cluster has authors who have contributed more towards theory building. Scholars also tried to explain if existing theory can explain the RKT or do we need new theories. Though authors found some explanation in existing theories such as knowledge-based view, social capital theory, and absorptive capacity but still whether same theories can be used to explain RKT in emerging economies multinationals is still a point of debate.

The *fourth cluster (yellow color)* has 4 authors who have worked on facilitators of RKT such as subsidiary's knowledge stock, richness of transmission channels, capacity to absorb the incoming knowledge (Gupta and Govindarajan, 2000), control mechanisms in subsidiaries (Gupta and Govindarajan, 1991), inter-unit communication (Ghoshal *et al.,* 1994), and relative absorptive capacity (Lane and Lubatkin, 1998). Further, focus has been shifted on transfer of capability to manufacture new products (Kogut and Zander, 1993), and how firms learn new skills by recombining their current capabilities (Kogut and Zander, 1992).

The *fifth cluster (purple color)* has 3 authors and focuses on how role of organisational learning in one subsidiary impacts the outflows of knowledge to other sister units (Schulz, 2001).

It further highlights causal ambiguity in the process of knowledge transfer between strategic alliance partners (Simonin, 1999). Authors have also focused on effects of learning capacity, learning intent, knowledge ambiguity, and technological knowledge transfer in international strategic alliances (Simonin, 2004). Thus main focus of authors in this cluster is on RKT process in alliances.

Sixth cluster (sky blue color) has 2 authors and focuses on subsidiary characteristics that impact RKT. Some major characteristics highlighted by authors are subsidiary innovativeness and subsidiary power (Mudambi *et al.*, 2014).

4.8.Keyword analysis of research on RKT

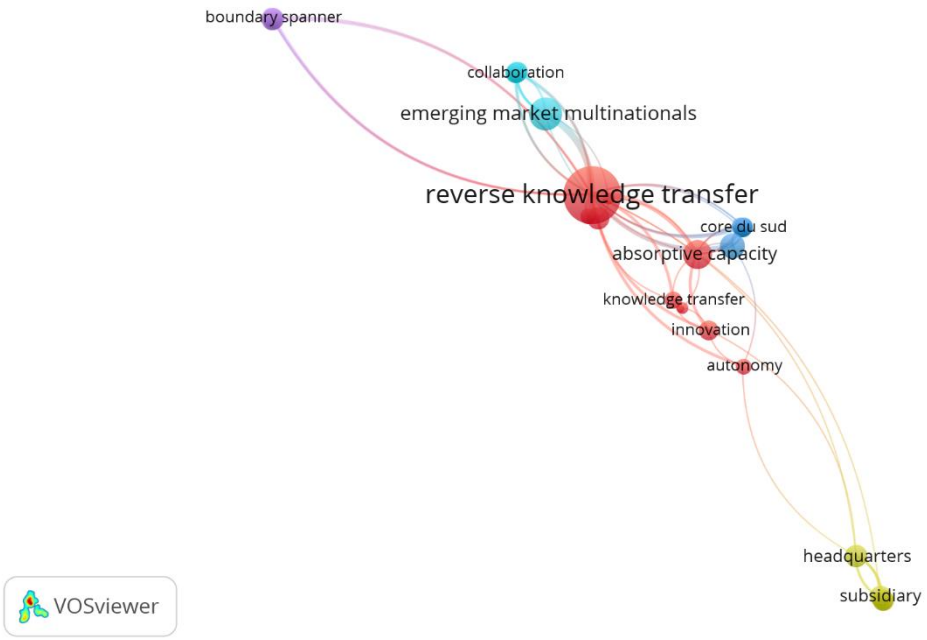


Figure 4: Co-occurrence network of author keywords

An observation of the author keywords of articles provides an idea of the literature related to those research (Khanra *et al.*,2020). We draw a co-occurrence network of author keywords for our dataset and identified important keywords. This would help the scholars in providing future research directions.

From above figure we can say that various factors facilitating RKT such as absorptive capacity of the recipient organisation, autonomy given to subsidiaries, and relevance of knowledge transferred back to parent impact the final knowledge or innovation knowledge transferred back to headquarters. It also focuses on emerging economies and local knowledge transfer to global multinationals. In addition, it also highlights headquarter-subsidiary relationship. To overcome the liability of newness by gaining knowledge about customers, local government, distribution channels, etc., parent organisations start depending on their subsidiaries for this local knowledge. Finally, it focuses on boundary spanners or the barriers of RKT.

4.9. Thematic Map

With keyword co-occurrence analysis, clusters of keywords (and their inter-relationships) are found and inferred as themes. These research themes are classified using two parameters: "density" and "centrality". Themes are categorised into four groups through the median and mean values obtained for density and centrality (Coulter *et al.*, 1998; Cahlik, 2000). A research field can thus be presumed as a set of research themes plotted in a two-dimensional space. The keywords and their interconnections, in a theme, plot a network graph, referred to as thematic network (Cobo *et al.*, 2011). We discovered four kinds of themes from the quadrant in which they are placed (Figure 5).

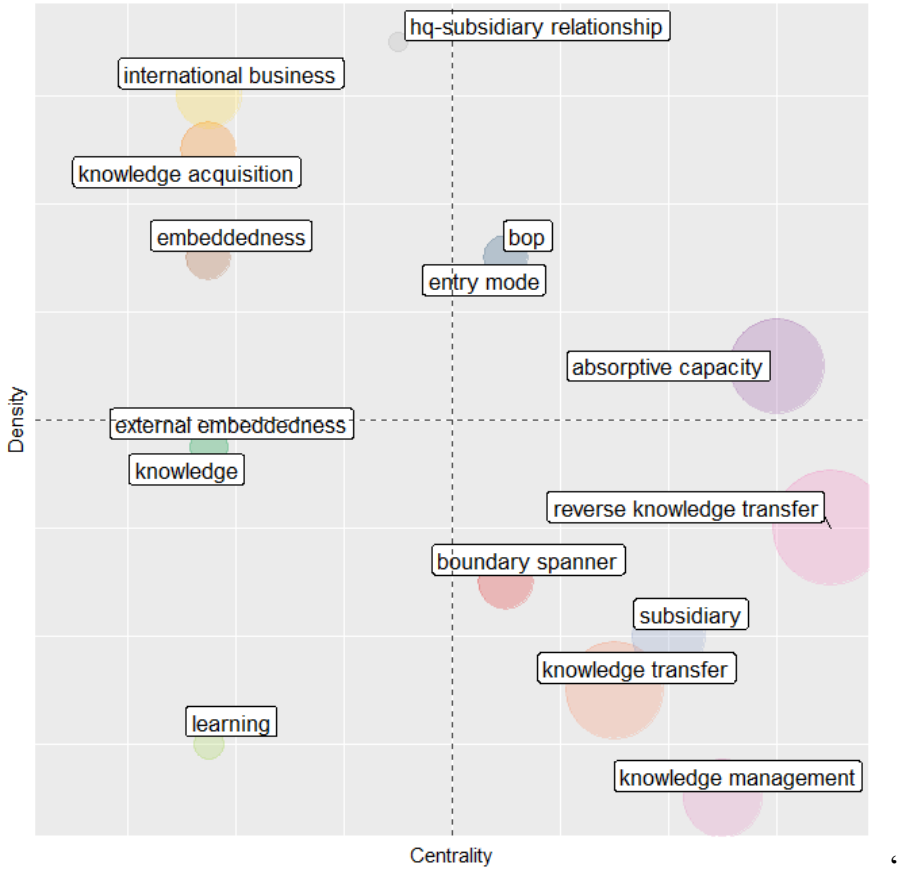


Figure 5: Thematic map based on author keywords

Theme 1: Themes in the top-right quadrant are important and are established to provide a structure to a research field. They are identified as the motor themes of the domain and reflect strong centrality and high density. These motor themes are externally linked to concepts associated with other themes and theoretically connected.

If we look at the above map, this comprises absorptive capacity, entry mode and headquarter-subsidiary relationship. From the time absorptive capacity was introduced by Cohen and Leviathan (1990), it has become a widely adopted concept in organisation studies. Absorptive capacity is one of the facilitators in RKT (Minbaeva *et al.*, 2007; Song, 2014; Zhou *et al.*, 2020), and its role cannot be ignored in knowledge transfer (Chen, 2004).

Similarly, the headquarter-subsidiary relationship has been an important element in RKT (Ambos and Birkinshaw, 2010) and emerging economies (Pereira *et al.*, 2016) research. Entry

mode, which has been studied in international business (Hill *et al.,* 1990; Andersen, 1997), is one of the key determinants of RKT (Malhotra, 2003; Meyer *et al.,* 2009; Mudambi *et al.,* 2014).

Theme 2: Top-left quadrant themes have well connected internal ties, but few external ties and thus are marginally significant for the field. These are very specific and peripheral. These encompass international business, knowledge acquisition and embeddedness.

International business scholars have emphasised that emerging economy firms go global to seek knowledge (Nair *et al.,* 2015; 2016); knowledge acquisition is an important factor in the RKT process (Buckley *et al.,* 2009; Fu *et al.,* 2018; Liu and Meyer, 2020) and the role of embeddedness (Najafi-Tavani *et al.,* 2012; 2015; Isaac *et al.,* 2019) too cannot be denied in RKT These three themes are well established and are fields of research in themselves.

Theme 3: Lower-left quadrant themes are inadequately developed and peripheral. They have low centrality and density, primarily demonstrating evolving or endangered themes. These consist of external embeddedness, knowledge and learning.

RKT is an emerging topic, and the role of external embeddedness and learning is also gaining the attention of scholars (Froese *et al.,* 2020; Arias-Perez *et al.,* 2021; Raziq *et al.,* 2021). There are many scopes for academicians and practitioners to explore in this field, such as the role of external embeddedness in technology transfer, innovation and parent-subsidiary relationship, etc. Similarly, most of the research in the RKT area is related to developed economies (Gupta and Govindarajan, 2000; Ambos *et al.,* 2006; Luo and Tung, 2007), although, since the last decade, emerging economies have also started gaining attention from scholars (Rabbiosi and Santangelo, 2013; Mudambi *et al.,* 2014; Nair *et al.,* 2015; 2016; Munjal *et al.,* 2021). Still, there is scope for research into how RKT helps in open innovation, reverse innovation, H.R.M. practices, etc.

Theme 4: Lower-right quadrant themes are not well established but are significant for a particular research field. This quadrant comprises transversal and, in general, basic themes.

Themes here consist of reverse knowledge transfer, subsidiary, knowledge transfer and knowledge management. As discussed earlier, RKT is an emerging field and has attracted the attention of scholars from various streams (Jimenez-Jimenez *et al.,* 2019; Isaac *et al.,* 2019; Liu and Meyer, 2020). The subsidiary's role (Rabbiosi, 2011; Kawai and Chung, 2019; Sarabi *et al.,* 2020), its absorptive capacity (Park and Chung, 2019), and relationship with headquarter (Najafi-Tavani *et al.,* 2015) all impact RKT.

5. Conclusion

Our study aims to present a synopsis of RKT research through extensive bibliometric analysis. Although a literature review on RKT has been published but an exhaustive network and bibliometric analysis in this domain have not been done. Our research study has tried to fill this research gap. Our analysis was conducted using the VOSviewer software. The documents used for analysis were obtained from the Scopus bibliographic database, widely considered the most significant in the scientific community. This study has presented how the field has evolved, major contributors, and their high impact work. The detailed discussion on findings is presented in the next sub-section.

5.1 Future Research Directions

This study helps us understand how RKT has evolved as a field since its inception. It was first introduced through technology transfer in a developed economy context. Since then, there have been numerous studies to understand the concept and role of subsidiaries in RKT, factors and barriers of RKT. Recently, the shift has been towards emerging economies. Overall, RKT is a developing and maturing field. There is enough scope for the enrichment of the area as relatively fewer prominent articles are available in this field. A surge is expected in the research as a solid grounding is provided by the existing research unavailable a decade ago. For the benefit of scholars, we identified various directions for future research. A brief of each is discussed below.

Firstly, when we observed this field closely, we found that the studies concentration is in a developed market context (specifically in the U.S.A., U.K., Europe). In contrast, studies on emerging economies multinationals are scant. Whatever research is there, it focuses more on the Chinese and Indian context, whereas other emerging economies such as Russia, Brazil, Saudi Arabia are neglected. Of late, developed and emerging economy multinationals are expanding in third world countries. Future research can study RKT in these countries. Moreover, even emerging economies such as India like expanding to countries with a similar environment such as China, or nearby countries such as Sri Lanka, Pakistan, etc. Therefore, it would be interesting to study the knowledge flow between organisations of these countries.

Second, looking at the methodology used in RKT studies, most studies have focused on either survey or case-based studies. Future studies can focus on mixed methods to capture a

broader view of people involved in the RKT process. There is a concentration of cross-sectional studies. Further research studies can focus on longitudinal analysis. Most of the studies control for subsidiary size and age, but these have a major impact on the flow of knowledge. As the subsidiary grows older, it gains more knowledge and experience; therefore, the age of the subsidiary becomes an important variable in RKT. Subsequent studies can compare knowledge flow from more senior and new subsidiaries.

Third, scholars can focus on the intersection of different disciplines with RKT. Various research fields overlap with the RKT field and may have other attributes leading to further explanations and inferences than those suggested in our study. Hence, future research may use bibliometric approaches to examine the intersection of the RKT field with other fields. Future scholars can study the impact of RKT on areas like supply chain, logistics, organisational learning and marketing. Similarly, we can see how other fields such as Economics (transaction cost economics) etc., can contribute towards understanding of RKT.

Fourth is the ignored role of technology in RKT. With the increased importance of technology in the communication process; future scholars can see the impact of electronics-based coordination mechanisms on RKT.

Fifth, future research may include more keywords, such as referring to different disciplines proposed above. Including more keywords will result in a larger set of papers. However, this requires advanced bibliometric and network analysis tools and approaches as existing tools have trouble dealing with huge databases.

Sixth, most RKT studies are skewed towards the service sector, specifically to the I.T. sector. More studies can be on the manufacturing sector. Though there are studies in this sector, the focus should sharpen on manufacturing firms based in emerging economies. Subsequent studies can focus on these sectors and do a comparative study. Lastly, though studies have focused on facilitators of RKT, similar attention has not been given to barriers. Future scholars can take up this subject to better understand the field.

Researchers may also perform a comparative analysis of data acquired from multiple scholarly databases. We hope these suggestions will offer new insights, provide a direction of research to scholars, and advance knowledge in the RKT field, which is here to stay, unlike a fad.

5.2. Research and Managerial Implications

This study reflects that RKT research has experienced remarkable growth from a complete viewpoint in recent years. There was a surge in publications from 2008 onwards, and many of the influential papers seemed to have been published between 2013 and 2018.

Concerning individual scholars centred on performance evaluation, it appears *Ambos and Ambos* are, by far, the most prominent researchers in this field of research. Our study supports the view that a handful of scholars have made a significant contribution to the area: *Rabbiosi*, *Gupta and Govindarajan*, *Mudambi* and *Kogut*, to name a few. However, as the field grows, many additional authors have started contributing to this discipline, expanding the work in different directions. Most studies have focused on survey-based or case study based methodology.

The geographic distribution of the studies reflects that Europe has the greatest number of publications though only a few are influential ones, with scholars from the U.S.A not far off. The dispersion of the research has started touching Asia also. The empirical and conceptual studies have formed the foundation and signify the most significant works, as was depicted through the clustering approach.

It is important to identify prominent scholars who have contributed significantly in this field to lay the foundation for future developments. Observing research from authors and their co-authors can provide directions for further studies. For example, leading scholars have recently started focusing on H.R.M. practices and their role in RKT, RKT in cross-border acquisitions and mergers and RKT's from emerging markets to developed markets.

5.3. Limitations

The main limitation of this study is that bibliometry is an aggregative technique with a quantitative emphasis. Interpretation of themes and sub-themes from clustering exercises is always subject to the authors' subjective interpretation. There is no way to be strictly objective in the sense-making process. Nevertheless, for analysing scientific progress in a field that has accumulated significant research output, bibliometric techniques may complement the more traditional literature survey methods. A minor constraint is related to publications from non-English speaking researchers. Studies only in English were considered for our research. Despite the above limitations, we believe

our research makes a major contribution to the understanding of the concept and provide some insightful suggestions for future research to scholars.

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