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2	
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A bibliometric analysis on foreign direct investment

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Abstract: Foreign direct investment is defined as expanding a business beyond one's domestic country, and is a continuously growing topic that has gained the attention of numerous scholars all around the world. This interest has developed as a result of the great economic and social impact FDI leaves in a society. The purpose of this paper is to present a bibliometric review on this topic including all papers published until 2020 as there is a need to have a comprehensive analysis on all literature that will help in identifying the literature gap and guide future researchers when conducting their research. The bibliometric analysis methodology was conducted on 4,525 articles between 1942 and 2020 on the subject of FDI. The data was extracted only from Scopus as we wanted to focus our attention on the leading worldwide used citation database that includes modern material. The top authors, countries, organisations, and documents were also identified. **Keywords:** foreign direct investment; FDI; economic growth; capital flow; globalisation; multinational enterprises.

JEL codes: A10, F00, F16, F30, F10, F39.

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1 Introduction

Foreign direct investment (FDI) frequently involves building production facilities overseas (Sultana and Turkina, 2020). There are several ways that multinational corporations (MNCs) can extend their business abroad such as greenfield investment, cross-border acquisition of an exiting business, or joint ventures. FDI can benefit both MNCs and the host countries. A multi-national company's benefit lies in the fact that it can reduce the cost of production when the host country has cheap production inputs and cheap labour. On the other hand, the host country benefits from the MNCs since they create new jobs in the market thus reducing the unemployment rate and contributing to the economic growth (Blomström and Kokko, 1999). However, a major drawback of FDI

is the political and financial risks the MNC may encounter while operating in a foreign country. In addition, some home countries of the MNC may suffer from excessive spillover impact and migration of jobs (Hao et al., 2020).

However, despite the few drawbacks of FDI, it still has significant importance on the economy of the countries (Cicea and Marinescu, 2020). FDI is a major element for countries to attract the technology, capital, and know-how needed to transform their economies from traditional activities to higher-end manufacturing and services (Javorcik, 2007). Through the FDI, foreign-owned companies have the chance to leave a positive effect on the domestic economy and productivity levels of local corporations. The improvement that foreign firms leave in the domestic market could be viewed from a macro and a micro perspective (Alfaro and Chauvin, 2020). When examining the macro level, FDI could create different and modern economic sectors that have never existed in the country, diversify the country's exports, and boost the economy's technological frontier of the country (Alfaro and Chauvin, 2020). On the micro-level, FDI could promote technology transfer through knowledge spillovers and connections between foreign and local firms, enhance employee and managerial competencies, and improve investment incentives and productivity in downstream and upstream areas (Alfaro and Chauvin, 2020). In addition, the strong competition that the foreign companies' entry imposes on the domestic market could trigger domestic companies to improve their efficiency, exclude unproductive local companies, and redistribute production factors to more productive corporations and uses (Alfaro and Chauvin, 2020).

It is also vital to mention that the subject of FDI is strongly associated with other fields such as economic growth, development, capital flow, globalisation, spillovers, corruption, risk and pollution. When it comes to economic growth, development, and capital flow, we can see that FDIs are a mean to gain physical capital thus increasing capital flow and moving human capital to the host country which leads to its development, which will all result in a boost in the economic growth rate (Alvarado et al., 2017). Additionally, the FDI of MNCs is considered to be the major driving force of economic globalisation and the key broad channel that allows the expansion of economic globalisation practices throughout the countries with varying levels of development (Pekarskiene and Susniene, 2015). FDIs also result in the increase of several spillovers including technology and knowledge spillover (Ji, 2006). However, when establishing FDIs several risks should be further taken into consideration including political and economic risks. It is proved that countries with higher political risk attract less FDI. Similarly, countries with higher levels of development result in higher levels of FDI activity (Busse and Hefeker, 2007). In addition, it was found that developing countries that have lower levels of corruption experiences a greater positive impact on economic growth in which the FDI is operating (Freckleton et al., 2012). Finally, the growth of FDI also rose pollution concerns and made countries and individuals question if pollution-intensive industries are intendedly located in places with weak environmental standards, turning these locations into 'pollution havens' and destroying the environment (Dean et al., 2004).

Therefore, after defining what FDI means and its huge importance on the countries' economy, and topics closely related to it, it is essential to conduct a comprehensive analysis of all papers published in this regard and identify the key contributors on the journal, author, organisation, and country level, and to further define the top documents and keywords. Its also critical to shed the light on the evolution of FDI, highlight other interrelated subjects and areas of research linked to FDI, and propose a future research

agenda for a deeper understanding of the subject (Zhang, et al., 2019). This will hence provide a direction to authors, students, and researchers who are interested in studying or researching the subject of FDI (Nobanee, 2020). Therefore, the research questions of this paper were defined in light of previous bibliometric reviews (Donthu et al., 2021a, 2021b, 2021d; Kumar et al., 2021a, 2021b, 2021c) as:

- RQ1 What are publication and citation trends in FDI research?
- RQ2 Who are the top journals, authors, organisations, and countries in FDI research?
- RQ3 What are the top documents published on the topic of FDI?
- RQ4 What are the major themes in FDI research?
- RQ5 Which directions should researchers pursue to advance FDI research?

This paper is thus structured to deliver first a complete literature review on the bibliometric methodology used to conduct this research and then discuss the topic of FDI in general and the important subjects related to it including greenfield investments and cross-border acquisition. Followed by a methodology section that discusses the methods used in further detail. Afterward, data gathered was analysed using the Scopus database, the VOSviewer application and NVivo software. The results of the analysis revealed that the subject of FDI is the interest of researchers since 1942. In addition, a list of influential journals that published the highest number of documents and poses the highest number of citations regarding the topic was identified as good resources to refer to when gathering information. Moreover, influential writers that have dominated the FDI field with their affiliated organisations and countries were highlighted to provide future researchers a clear insight into how the topic evolved. Finally, this paper proposes a research agenda to deepen the understanding of FDI based on six main streams including human capital, energy consumption, financial development, innovation, corruption and spillover.

2 Literature review

2.1 Foreign direct investment

FDI is defined by Siddique et al. (2017) as the inflow of investment from one country to a different country. Moran (2016) also defined FDI from his perspective and stated that it is conducted when a company in one country launches a business operation in another country, by means of setting-up a new wholly-owned subsidiary, or acquiring a domestic firm or establishing a joint venture in the host economy. Carkovic and Levine (2002) and Othman et al. (2019) also stated that FDI generally encompasses the acquisition or formation of assets, acquire of stakes, and creation of processes that can produce income. From Afolabi et al. (2019) perspective, pursuing FDI as a MNC usually requires the formation of manufacturing facilities abroad. FDI is a significant source of capital for developing nations and continues to be a major source of investment in the developed world (Milner, 2014). The reason why countries conduct FDI can be also justified using the internalisation theory. The internalisation theory suggests that a country conducts FDI in a different country as a result of the difference in economies of scale which could decrease the cost of production (Siddique et al., 2017; Narula and Verbeke, 2015). FDI from developing countries has increased dramatically over the past two decades

(HarunaDanja, 2012). It is deemed to be an engine of development as it recognises positive productivity spillovers on the host countries and its' impact on economic growth (Ashraf et al., 2021). In fact, over the past 20 years, evidence shows that FDI has grown to be the main element of international economic integration (Pandya, 2016). It could be also seen that since 1990 on average FDI grew by about \$50 billion per year which reveals a 7.6% per vear (Milner, 2014). FDI also encourages economic growth through the formation of dynamic comparative advantages that result in technological progress (Ugochukwu et al., 2013). However, for a country to attract FDI successfully and gain its benefit the government should simplify and relax entry barriers for corporate activities and provide investor-friendly laws and tax systems for foreign investors (Devajit and President, 2012). That is due to the fact that administrative, cultural, geographic, and economic variances among countries affect internationalisation decisions, approaches, and consequences (Rienda et al., 2019). In addition, one advantage of FDI is also based on preserving the controlling ownership of a business located in one country by a company placed in a different country (MGaleeva, 2019). Thus, FDI can be differentiated from foreign portfolio investment due to the concept of direct control (Durham, 2004). FDI can be classified as vertical, horizontal and conglomerate. Vertical FDI involves the establishment of facilities abroad pursuing related business activities, which are slightly different from the main operations (Milliou and Sandonis, 2019). Due to low factor costs including capital, labour, land, and entrepreneurial ability abroad, vertical FDI is preferred to accelerate international trade activity (Tanaka, 2011). By forming a horizontal FDI, the equivalent type of business activities is established in the home and host country (Bi et al., 2020). This approach is usually conducted by businesses competing in the same sector (Koska, 2020). The conglomerate FDI strategy is used by conducting unrelated business activities, compared to the current operations (Subhanij and Annonjarn, 2016).

2.2 Greenfield investment

One category of FDI is the approach of greenfield investment, which involves the establishment of new production facilities abroad including the construction of offices, plants, and other buildings (Alon et al., 2020). Choosing a greenfield strategy to enter foreign markets, allows to build up facilities from scratch to customise plant operations (Pehrsson, 2020). Greenfield investment approach will most likely be avoided when the fixed plant setup cost is relatively high (Qiu and Wang, 2011). Nevertheless, greenfield investment can result in major effects on the host country's economic growth in several approaches (Forte and Moura, 2013; Nguyen et al., 2021; Shesha, 2018; Yokota and Chen, 2012). First, as the greenfield investment requires constructing the whole thing from scratch, it could create significant impacts on capital stock for production, which is an essential element of growth (Nguyen et al., 2021). Second, greenfield investments could stimulate growth as the result of improved competition and the facilitation of job markets (Nguyen et al., 2021; Owen, 2019). However, there are also risks associated with the formation of new entities abroad, since the capital requirements and local market knowledge can be considered as significant barriers (Yahya and Rafiq, 2020). However, there is increased competition among countries to attract greenfield FDI, which resulted in a significant decrease in corporate tax rates (Ansong, 2019). Furthermore, this strategy can also contribute to the consumption of renewable energy, if government actions are strong enough to equip new production facilities with green energy solutions (Yahya and Rafiq, 2020).

2.3 Cross-border acquisition

Cross-border mergers and acquisitions are regarded as one of the key approaches used by corporations to retain a competitive advantage and compete in the high-velocity international industry (Kiessling et al., 2021). Cross-border acquisitions are defined as the purchase of existing assets and operations abroad (Chen et al., 2020). It is different from the typical domestic acquisitions in several aspects. First, the process of cross-border acquisition tends to be more complicated than a domestic acquisition since cross-border activities involve considerable variations (especially culture) that occur between the countries of corporations participating in the acquisition (Basuil and Datta, 2015; Collins et al., 2009; Lee et al., 2019; Vermeulen and Barkema, 2001). Second, cross-border acquisitions are normally considered by elevated levels of information asymmetry and uncertainty (Basuil and Datta, 2015; Owen, 2019).

However, one key advantage of cross-border acquisition is that the capital requirements are lower compared to a greenfield strategy since facilities are already established and local management is well educated about government regulations (Gu et al., 2020). The mergers are usually performed when the managers of the acquiring company recognise that the total value of two companies merged is higher than each company separately (Cuypers et al., 2017; Erel et al., 2012). Knowledge transfer also contributes significantly to the value creation, for both the acquirer firm and the target of a cross-border merger and acquisition (Ahammad et al., 2016; Birkinshaw et al., 2000; Sarala et al., 2016). Nevertheless, the purchase of existing entities abroad also includes various risks, such as the level and quality of financial disclosure, different tax laws, and obstacles in adjusting manufacturing operations to the current procedures (Vanwalleghem et al., 2020) Moreover, for firms willing to perform the cross-border acquisition understanding the acquisition process and benefiting from previous companies experiences, are a must for corporations trying to improve the execution of acquisitions at any stage of the acquisition procedure (Dikova et al., 2010).

2.4 Bibliometrics

The application of statistical approaches to evaluate journal articles, books, and other disseminations is referred to as bibliometrics (Firdaus et al., 2019). The bibliometric method can be further defined as the organised procedure of relating all papers that have been generated in a specific area in terms of connections, volume, citations, efficiency, quality, and pursuing the academic development and developing trends in that field (Khatib et al., 2021; Nobanee, 2021). Donthu et al. (2021c) also added that bibliometric analysis is one of the most objective and powerful quantitative techniques for review studies. Ellegaard and Wallin (2015) also stated that bibliometric analysis nowadays is strongly recognised as scientific specialties and is an essential component of research assessment methodology mainly within the scientific and applied fields. Furthermore, Lu et al. (2018) and Nobanee et al. (2021a, 2021b) mentioned that the bibliometric approach facilitates the visualisation of enlargement of knowledge in information science. Nobanee et al. (2021b) further stated that the bibliometric analysis is a practical method when

planning to measure research outputs and using the Scopus database. Finally, the bibliometric analysis also analyses publications further by assessing the publishers, impact factors, citations, counties of publication, and the number of citations (Fahimnia et al., 2015).

2.5 Bibliotmetrics and FDI

Many firms pursue FDI as their preferred mode of entry to expand their operations internationally. Nevertheless, there is a lack of a standardised sequential publication incorporating the evolution of this field over time (Olczyk, 2016). In the past, attention was paid to outward FDI of developing economies and their corresponding determinants (Bruhn et al., 2016). Another paper revealed that the most assertive literature in FDI relates to topics in the area of business management, economics, planning, development and international relations (Fetscherin et al., 2010). Additionally, operators and catalysts of outward FDI were analysed by using a bibliometric approach (Alon et al., 2018). However, the preceding results are drawn on findings related to FDI in China. Thus, this study aims to identify the determinants and streams of evolving literature on FDI in general over the past decades, as well as to analyse sub-fields of the study context. Furthermore, journals and publications with high impact factors are identified to backtrack the emergence of the study context. The importance of this study lies in the fact that the COVID-19 pandemic has shown that economic health is just as important as public health (Lim, 2021) and de-internationalisation has become somewhat a common sight today despite the maturity of globalisation (Lim and Mandrinos, 2020; Mandrinos et al., 2022).

3 Methodology

The method used in this paper is a bibliometric analysis of data published in the Scopus database. The paper used bibliometric analysis as it is the most appropriate for reviewing a large corpus of study, in addition to being one of the most objective and powerful quantitative techniques for review studies as the bibliometric guidelines stipulated by Donthu et al. (2021c) in the *Journal of Business Research*. Scopus database was chosen among several types of available databases because it covers a greater number of journals and provides different types of documents not limited only to articles when compared to other databases (Sánchez et al., 2017).

First, we identified the possible keywords used for FDI where it appeared in the title including 'FDI', 'direct foreign investment' or 'direct investment'. Using words like 'foreign investment' and 'investment' will not add any papers since 'FDI', 'direct foreign investment', and 'direct investment' already compromise the word like 'foreign investment' and 'investment' indirectly. Furthermore, such words are too general that will result in papers that are not so relevant to the topic thus making the results vague. The Scopus initial search resulted in 5,760 documents so we refined our document type to include only articles and reviews, which resulted in 4,722 documents (4,325 articles and 200 reviews). Finally, we refined the language limiting it to English, which resulted in 4,525 documents. The data retrieved ranged from the year 1942 to 2020 implying that the interest regarding the topic started back in 1942. Thus, the paper included all relevant

research from 1942 to 2020 to conduct the bibliometric analysis in the most efficient, comprehensive and accurate manner.

We extracted the data in CSV file format and RIS format. Additionally, the Scopus analysis area was explored where we found multiple graphs representing different areas of the data such as the timeline of documents created over the years, documents by type, source, author, affiliation and by country. To record the Scopus analysis of the data, screenshots were taken of each graph and its data was saved separately on an Excel sheet where we can create our own graphs with the live data.

To further analyse the data, we used the VOSviewer application, which is a software that provides tools to create visual bibliometric networks. Different areas of the Scopus data were analysed with specific parameters as the following:

- Sources: Minimum number of documents of a source is 1, the minimum number of citations of a source is 100, resulting in 168 sources.
- Authors: Minimum number of documents of an author is 1, the minimum number of citations is 100, which results in 410 authors.
- Organisations: Minimum number of documents of an organisation is 1, the minimum number of citations is 100, which results in 367 organisations.
- Countries: Minimum number of documents of a country is 1, minimum number of citations of a country is 100, which results in 65 countries.
- Documents: Minimum number of citations of a document is 100, which results in 195 documents.
- The co-occurrence of all keywords: Minimum number of occurrences of a keyword is 30, giving 113 results.

Finally, we conducted a content analysis by using NVivo software where the Scopus data was uploaded to gain insights about the keywords used by the authors of FDI journals. The system checks the most used words and represents them in different sizes and colours to imply the frequency of use. There are five multiple levels of data analysis, we captured three, but in this paper, we are representing the third level which represents the keywords and its synonyms.

4 Results and discussion

4.1 Publications by year

FDI is a wide subject with many published materials discussing different aspects of it. Hence, to conduct an efficient analysis, the results were reduced from all types of documents to only articles and reviews to make it feasible to work with the data. As represented in Figure 1, the data covers 4,325 articles and 200 reviews.

The data covered the years from 1942 till 2020 as presented in Figure 2. By looking at the number of outputs produced every year, it is evident that the number of articles is increasing at a steady rate with 2019 having the highest number of outputs at 355 documents. It is quite normal for the FDI subject to be a common interest for many researchers since it is an important driving force of economic globalisation (Pekarskiene

and Susniene, 2015). It is also still early to judge the number of documents produced in the current year, as it is still not over. Perhaps, this year's research will be around how can FDI survive during pandemics similar to COVID-19. Thus, the overall result links to the paper first research objective which is 'What is the publication trend in the research of FDI?'

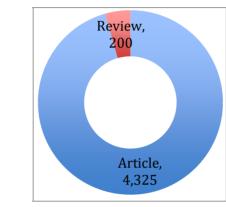
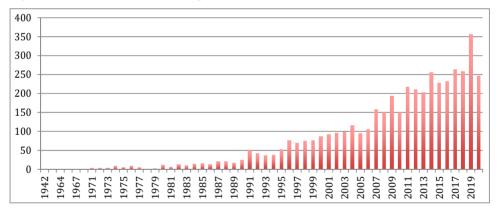


Figure 1 Document types (see online version for colours)

Figure 2 Number of FDI documents per year (see online version for colours)



It would be interesting to know how the FDI evolved over time and how different it is expected to become with the continuous development of technology.

4.2 Most influential journals (sources)

There are two categories of the top 10 journals based on the number of citations presented in Table 1 and based on the number of outputs in Table 2. Some journals are present in both lists such as the *Journal of International Business Studies* with 46 documents and 7,375 citations ranking number one in terms of citations. Another journal is the *World Economy Journal* with 82 documents and 2,308 citations ranking number one in terms of the number of documents produced.

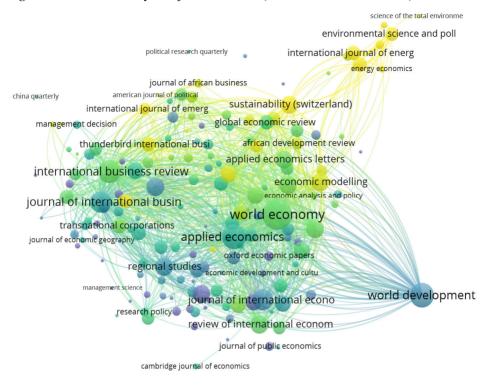


Figure 3 VOSviewer analysis of journals network (see online version for colours)

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2000 2005 2010 2015
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Rank	Journal	Citations
1	Journal of International Business Studies*	7,375
2	Journal of International Economics*	6,870
3	World Development	4,171
4	American Economic Review	3,931
5	European Economic Review	2,701
6	Journal of Development Economics	2,407
7	World Economy*	2,308
8	Review of Economics and Statistics	1,853
9	Applied Economics*	1,813
10	Journal of Development Studies	1,598

Table 1Top 10 journals with highest citations

Note: *Top 10 in citations and documents.

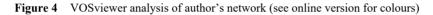
The VOSviwer analysis in Figure 3 shows the most influential journals including the World Economy Journal, The International Business Review, and The Journal of International Business Studies. Both the World Economy Journal and The International

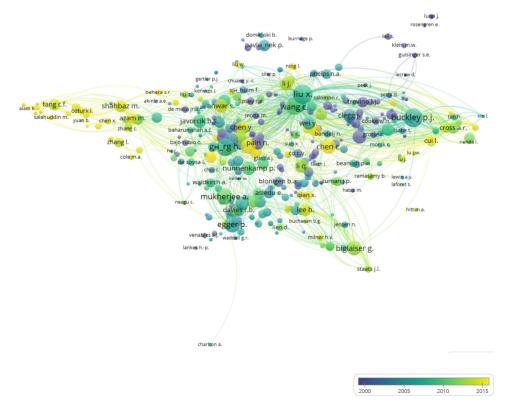
Business Review Journal have published articles between 2010 and 2015; however, the journal of international business is related to older years' studies. Hence, the top journal analysis results answers a part of the second main objective of the paper that is 'Who are top journal in FDI research?'

Rank	Journal	Documents
1	World Economy*	82
2	World Development*	54
3	Applied Economics	54
4	International Business Review	51
5	Journal of International Business Studies*	46
6	Journal of International Economics*	43
7	Regional Studies	34
8	Economic Modelling	34
9	Review of International Economics	34
10	Journal of International Trade and Economic Development	34

Table 2Top 10 with the highest number of documents

Note: *Top 10 in citations and documents.





The implication of knowing the most influential journals can help authors who are interested in the subject of FDI to seek to research these journals for good sources of information. Additionally, authors in the field of FDI may seek influential journals to publish their articles. While looking for good journals, perhaps it is better to seek those with newer articles to ensure that the information is still valid and relevant.

4.3 Influential authors, their productivity and network

Figures 5 and 6 present the top 10 authors with the highest number of citations and documents. The author with the highest number of citations and the highest number of documents is Liu, X. with 21 documents cited 2,684 times which makes him the most productive and influential author on the subject of FDI. Buckley, P.J. is considered an influential author according to the analysis with 19 articles cited 1,867 times. Gi_rg, H. published 17 articles cited 1,441 times.

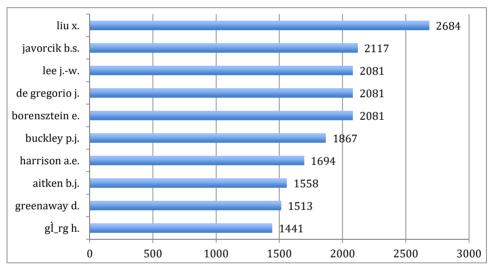


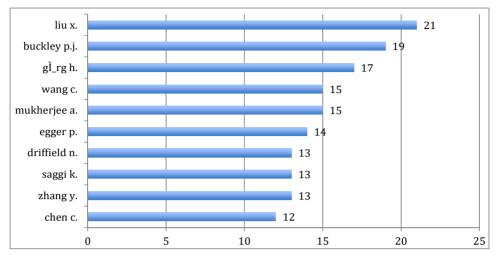
Figure 5 Top 10 authors with the highest citations (see online version for colours)

There are authors with very few articles and very high citations like Borensztein, E. who created only one article that got 2,081 citations. The colour-coding represents the years so from the VOSviewer analysis in Figure 4, it is noticed how the links from the new authors are getting further away from the old ones. Moreover, the analysis reveals that the most influential authors with the strongest links are those with articles published between 2005 and 2010.

Hence, the analysis presents an answer to the main research objective of the study that is 'Who are the top authors in FDI research?'

It is important to identify who are the most influential authors in a specific field of research to work with them. Their published work can also provide information on the subject and can be used while researching.

Figure 6 Top 10 authors with the highest number of documents/articles (see online version for colours)



4.4 Most influential organisations

Table 3 presents the highest-ranking organisations in terms of the number of citations and Table 4 presents the organisations with the highest number of documents produced. The organisation with the highest number of citations is the International Monetary Fund, with 3,639 citations. The organisation with the highest number of documents is the University of Nottingham, the UK with 17 documents.

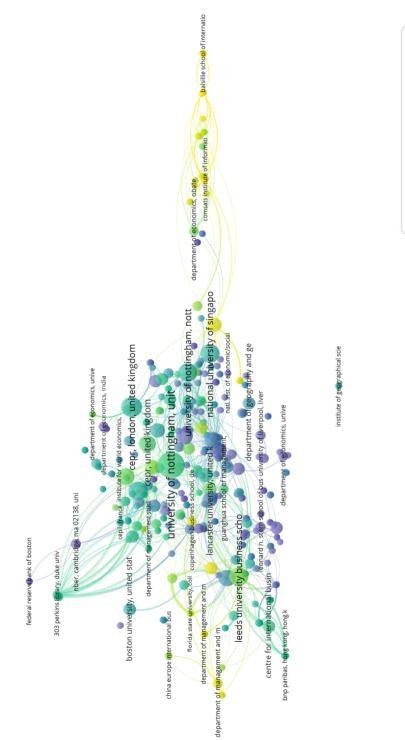
Table 3Top 5 organisations with the highest citations

Rank	Organisation	Citations
1	The International Monetary Fund, Research Department, Washington, DC 20431, USA	3,639
2	Center for International Business (CIBUL), Leeds University Business School, University of Leeds, Leeds, UK	2,444
3	Center for Applied Economics, Dept. Indust. Eng., Univ. de Chile, Santiago, Chile	2,081
4	Economics Department, Korea University and NBER, Seoul 136-701, South Korea	2,081
5	Graduate School of Business, 615 Uris Hall, Columbia University, New York, NY 10027, USA	1,558

Table 4	Top 5 organisations v	with the highest number	of documents

Rank	Organisation	Documents
1	The University of Nottingham, UK	17
2	CEPR, London, UK	7
3	Leeds University Business School, University of Leeds, Leeds, UK	6
4	National University of Singapore, Singapore	6
5	The University of Strathclyde, UK	6





The VOSviewer analysis in Figure 7 reveals a few other influential organisations including Cepr, London, the UK, and the National University of Singapore. The analysis also shows that the most influential organisations have published documents of FDI between 2005 and 2010.

Thus, this answers one of the paper's main research objectives that is 'Who are the top organisations in FDI research?'

It is important to know the most influential organisations in the subject to work with authors who are affiliated with these organisations.

4.5 Most productive countries

The top 3 countries with articles on FDI are consistent in all two categories: citations and the number of articles. The country with the highest ranks in the USA with 1,078 documents cited 41,578 times. The UK is the second 544 documents cited 20,078 times. China is the third with 411 documents and 5,637 citations. Table 5 presents the top six countries with the highest number of citations; these same countries are in the top 10 countries with the highest number of articles.

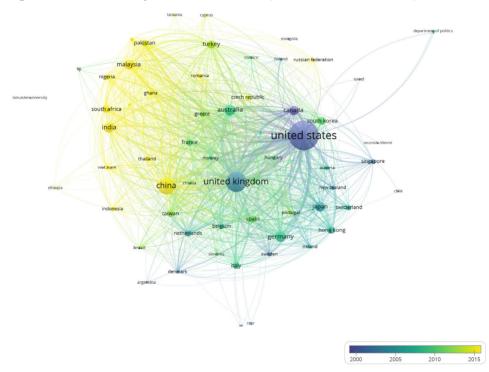


Figure 8 VOSviewer analysis of countries network (see online version for colours)

The analysis in Figure 8 reveals high collaboration between the different countries, but some countries were isolated such as Ethiopia. The USA and Canada have mostly old articles on the subject compared to the UK. China and India have more recent articles and that's not an incident since both of them are part of the BRICS.

Therefore, the results answer a main part of the second research objective that is 'Who are the top countries in FDI research?'

The most productive countries on the subject of FDI are important for a researcher to know to seek the articles produced by these countries. The newer articles can provide more relevant information; however, older articles generally can be beneficial to understand the basics or the foundations of a subject.

Rank	Country	Documents	Citations
1	USA	1,078	41,578
2	UK	544	20,078
3	China	411	5,637
4	Germany	180	5,225
5	Canada	147	4,249
6	Australia	186	3,843

 Table 5
 Top 6 countries with the highest number of citations and articles/documents produced

4.6 Most influential articles

Table 6 presents the top 10 most cited documents or articles. The document with the most citations is Borenstein, E. (1998) with 2,081 citations, followed by Aitken, B.J. (1999) which is cited 1,558 times. Javorcik, B.S. (2004b) is the third most cited article with 1,272 times. From Figure 9, we can see a widespread of the articles through time; however, the majority of the top ten most influential articles belong to the period from 1993 to 1999.

Rank	Document	Citations	
1	Borensztein, E. (1998)	2,081	
2	Aitken, B.J. (1999)	1,558	
3	Javorcik, B.S. (2004b)	1,272	
4	Buckley, P.J. (2007b)	1,133	
5	Gì_rg, H. (2004)	751	
6	Haddad, M. (1993)	690	
7	Feenstra, R.C. (1997)	634	
8	Markusen, J.R. (1999)	603	
9	Balasubramanyam, V.N. (1996)	600	
10	Kuemmerle, W. (1999a)	535	

The results answer the third research question that is 'What are the top documents published on the topic of FDI?'

The most influential articles on the subject of FDI are important to include in the literature review while conducting research.

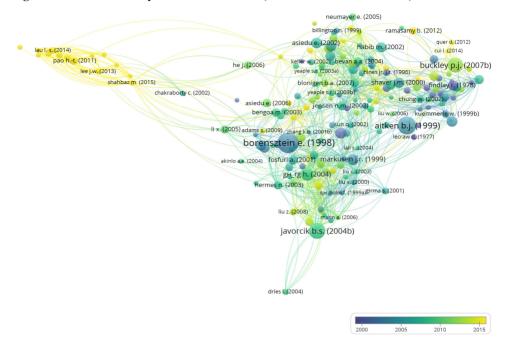
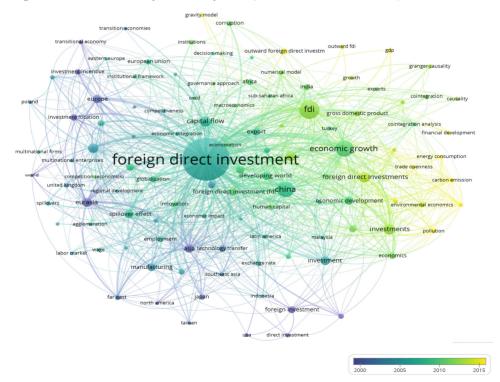


Figure 9 VOSviewer analysis of articles network (see online version for colours)

Figure 10 VOSviewer analysis of all keywords (see online version for colours)



4.7 Keywords and research areas

In the FDI research area, there are countless words and terms that are frequently used. The VOSviewer data represents 113 keywords (including index and author keywords) used as presented visually in Figure 10. As shown, the main keyword is FDI, and all researches were somehow connected to it. Then, we have some secondary keywords such as economic growth, capital flow, economic development, exports, corruption, and much more. In addition, China is shown as a keyword, which matches the finding in the literature review where newer articles on the subject of FDI are directed towards China. China is the second-largest economy after the USA and the Chinese economic growth is considered relatively high. One of the main reasons, which made China a place for FDIs, is its cheap labour cost (Dreger et al., 2017).

On the second analysis tool NVivo, we analysed the keywords. Figure 11 represents the third-level analysis of data where keywords and their synonyms are captured. The most used keywords by authors include FDI, growth, and economic development. It is very important to notice how FDI is linked to important subjects like globalisation, spillovers, risk and pollution. Therefore, highlighting the answer of the fourth research that is 'What are the major themes in FDI research?'

Figure 11 Level 2 NVivo analysis of authors' keywords and their synonyms (see online version for colours)



Sr. no.	Streams	Reference	Research question/explanation
-	Human capital	Bayar and Gunduz (2020), Anetor (2020), Shen et al. (2020)	Which government policies encourage FDI in the technology sector to advocate human capital and thus economic growth? Does a human capital policy facilitate the development of capacious space to benefit from FDI? Is there a need to include more entrepreneurial actions on the research agenda in China to explore new opportunities on outward FDI? What factors other than the regional GDP can be used to examine the interactions between outward FDI and entrepreneurship?
7	Energy consumption	Udemba et al. (2020), Fan and Hao (2020), Olaoye et al. (2020)	Is there a strategy framework to debate over financial and industrial events for Chinese authorities to preserve energy consumption? Does facilitation of entry to primary energy consumption for foreigners enhance FDI inflow?
ε	Financial development	Islam et al. (2020), Farouq et al. (2020), Villanthenkodath and Arakkal (2020), Donaubauer et al. (2020)	Does a developed financial system lead to discrepancies in the real output economy? Which government policies promote economic development to intrigue foreign investors to develop the financial sector? Do CO ₂ emissions impact the relationship between environment and economic growth from an FDI perspective? Is poor financial market development in host countries acceptable to MNCs, if other FDI determinants such as transportation and infrastructure overcome regulatory obstacles?
4	Innovation	Cui et al. (2020), Dhrifi et al. (2020), Sarkodie et al. (2020), Howell et al. (2020), Nyeadi and Adjasi (2020)	What is the impact of competition to invite and contain FDI in emerging economies? Should policy-makers distinguish the consequences of FDI based on sectors? Does the appraising of sectarian attributes towards renewable energy for a country-specific evaluation facilitate adequate policy recommendation to pursue FDI? What is the impact on product and process innovation by using numerous FDI flows between home and host countries to attract countries with higher technology standards?
S	Corruption	Wang and Liu (2020), Appiah-Kubi et al. (2020), Kamowa and Arunasalam (2020), Padmanabhan et al. (2020)	Does the level of corruption with a focus on bilateral government corporations enlarge the knowledge of institutional resonance? What impact does the occurrence of corruption and freedom of press represent on corporate governance and FDI in West African countries?
9	Spillover	Jiang et al. (2020), Negash et al. (2020), Cui et al. (2020), Huang and Zhang (2020)	Is there a difference between outward FDI technology spillovers paired with credit discrimination ownership between private and state-owned companies in the Chinese economy? What is the impact of R&D and human capital on outward FDI spillovers? Does inter-industry vertical spillover improve the productivity of firms by using econometric studies as a tool for Chinese inward FDI?

H. Nobanee et al.

5 Future research agenda

Building up the future research agenda to identify the main directions in FDI, a bibliometric and content analysis was used to establish streams with potential research gaps. First, we analysed all FDI-related publications in the years from 1942 until 2020 with the VOSviewer software to identify the future directions of research in FDI. The goal was to classify the streams according to unique words in the research map. Thus, the co-occurrence among the author keywords with a threshold of 30 words was used to establish clusters of future research. Second, the rare streams could be classified as human capital, technology transfer, energy consumption, financial development, innovation, corruption, spillovers and transition economies. Third, the FDI master file was filtered according to the latest publications in FDI research and thus limited to publications in 2020. The cleaned data accounted for 247 research papers. Those 247 papers were again filtered to match the identified streams. Nevertheless, after a rigorous analysis, the streams technology transfers and transition economies were removed from the future research agenda, since there were too few publications with corresponding very low citation scores. Fourth, the suggestions for future research were summarised into research questions and papers with similar directions were matched to the corresponding research questions to avoid repetitions. This organised method derived 19 future research questions represented in Table 7. The cite score of published articles in the stream human capital provided a cite score range between 0.3 to 3.2 and a SNIP code range between 0.151 to 1.165. Concerning the cite scores and SNIP codes, energy consumption accounted for ranges between 2.8 to 11.2 and 1.027 to 2.366, financial development for ranges between 0.2 to 4.9 and 0.091 to 1.165, innovation for ranges from 1.6 to 4 and 0.82 to 1.9, and corruption with ranges between 0.2 to 4.8 and 0.155 to 1.867, respectively. Spillover showed a cite score range between 1.1 to 4 and a SNIP code range between 0.577 and 1.105. The intense review of publications revealed six directions, on which future researchers should pay attention when conducting studies in the field of FDI. Especially policymakers are confronted with changes in FDI, as well as the emerging topic of the impact of FDI on the environment. However, there are also some limitations regarding the establishment of the future research agenda. First, not all papers listed on the agenda provided top-cited articles, since some cite scores and SNIP codes were below 1.0. This is due to the limitation of articles, published only in 2020. Future research should also include articles from previous years to identify trending topics in the FDI field. Second, due to the limited time frame of the research, other unique streams for future research may have been identified providing other interesting future directions of FDI research.

6 Implications

The results of the study will help future researchers when conducting their study in FDI in several ways. First, results demonstrate the top authors with their respective affiliations to allow future scholars to collaborate and benefit from authors who have sufficient knowledge regarding the topic. Second, top documents were identified to pave the way for scholars to refer to them when conducting a comprehensive literature review along with obtaining the most relevant and significant knowledge when it comes to FDI. Third,

highlighting the top journals based on citations and documents will help researchers publish their studies in journals interested in FDI and to allow them to refer to other papers regarding FDI published in these journals. Fourth, understanding which country publishes most regarding FDI will help scholars refer to papers published there as they compromise most of the knowledge regarding FDI. The newer articles can be utilised to provide more relevant information; however, older articles generally can be beneficial to understand the basics or the foundations of a subject. Fifth, significant keywords were identified to aid scholars in choosing and using the most relevant words when discussing their research on FDI. Finally, six different and significant topics related to FDI were proposed to give ideas for future researchers regarding the topics that need further research and could be further improved.

7 Conclusions

In conclusion, FDI regularly requires building production facilities overseas (Sultana and Turkina, 2020). Greenfield investment, cross-border acquisition of an existing business, or joint ventures is all examples of how an MNC can utilise the concept of FDI. FDI in general benefits both MNCs and the host countries. FDI is considered a significant topic as it is a key driver for economic growth for nations. Several researchers around the globe studied FDI and its related topics. However, despite the high number of published articles on the subject, there is a research gap, which is the lack of study on the evolution of FDI over time. This paper highlights that the direction of FDI interest moved from outward FDI of developing economies to FDI in China. For researchers who are studying the subject, the results of the bibliometric analysis can provide a direction to use the most influential sources and journals. It is also beneficial to know who the most influential authors are, their affiliated organisations, and countries to work with these authors. Other subjects are very connected to FDI including economic growth, capital flow, spillover, risk and pollution. Finally, the research in the FDI should continue as it evolves to bridge the research gaps on the subject.

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Abbreviations

FDI	Foreign direct investment
BRICS	Brazil, Russia, India, China, and South African are the main emerging countries with fast-growing economies
MNC	Multi-national company