

# Qualitative Measure of the Degree of Internationalization: The Case of Huawei

## Medición cualitativa del grado de internacionalización: el caso de Huawei

DOI: 10.32870/mycp.v10i29.724

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### Abstract

The study of the “degree of internationalization” (DOI) is an important topic in the academic literature of international business. Therefore, the main objective of this work is to measure the DOI of the Chinese company, Huawei, from the perspective of the “depth” and “breadth” of the DOI. To achieve this objective, a qualitative content analysis technique was utilized to analyze Huawei Company’s annual reports over 14-year, from 2006 to 2019, to extract the frequency of words associated with the DOI to carry out the measurement. Huawei’s annual reports for this period were collected from the company’s institutional page. The primary results obtained indicate an increase in the DOI for Huawei in the two dimensions studied of depth and breadth. Also, these results indicate a trend similar to the number of employees and Huawei earnings in the period from 2006 to 2019.

*Keywords:* degree of internationalization, Huawei, qualitative measure, breadth, depth.

### Resumen

El estudio del “grado de internacionalización” (DOI) es un tema importante en la literatura académica de negocios internacionales. Por lo tanto, el principal objetivo de este trabajo es medir el DOI de la empresa China, Huawei, desde una perspectiva de la “profundidad” y la “amplitud” del DOI. Para lograr este objetivo, una técnica de análisis de contenido fue utilizada para analizar los reportes anuales en un periodo de 14 años, desde 2006 a 2019, para extraer las frecuencias de palabras asociadas con el DOI para poder llevar a cabo su medición. Los reportes anuales de Huawei para este periodo fueron recolectados de la página de Internet institucional de la compañía. Los resultados primarios obtenidos indican un incremento en el DOI para Huawei en las dos dimensiones estudiadas de la “profundidad” y amplitud. Además, estos resultados indican una tendencia similar en el número de empleados y las ganancias de Huawei en el periodo 2006-2019.

*Palabras clave:* grado de internacionalización, Huawei, medida cualitativa, amplitud, profundidad.

### Introduction

The objective of this research is to measure the “degree of internationalization” (DOI) of the Chinese multinational company (MNC), Huawei. The international

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Artículo recibido el 10 de septiembre de 2020 y dictaminado el 18 de enero de 2021.

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expansion of companies originating in China increased from the last part of the '90s (Drahokoupil et al., 2017). Since then, these companies have taken important places in different economic sectors; many of them have become global leaders (Casanova & Miroux, 2019). Some examples of this are the retail company, Ali Express, which is one of the most important retailers in the world, or the company Hisense, which has become a world leader in the electronics sector.

The DOI literature is a widely studied area in international business (IB) literature. One of the first to propose ways to measure DOI was Vernon (1971), who proposes a measurement using quantitative indicators. Based on this, the most important measurement currently focuses on quantitative indicators and techniques (Mendoza et al., 2020; Sullivan, 1994; Velez-Calle et al., 2018). Thinking along these lines, the importance of this paper consists in proposing a new way of measuring DOI through a qualitative technique of content analysis that will help clarify and deepen the DOI topic.

In the literature, several different approaches to studying DOI have been identified, one that focuses upon the breadth and one that focuses upon depth. Various studies have focused on understanding the characteristics of both (Abdi & Aulakh, 2018; Ozdemir et al., 2017). Depth is defined as the commitment and degree of control of resources that a company uses to be able to internationalize, whereas breadth has to do with the physical expansion of a company to other international markets (Lopez-Morales, 2020).

It is also important to deepen the knowledge about the internationalization of multinationals (MNCs) in China, given the global leadership role that some of these companies occupy. In this particular case, the object of this study will be the Chinese MNC Huawei, for three reasons: first, for being a leading company in the technology sector worldwide (Micheli & Carrillo, 2016); second, for being a company originating from an emerging country, as is China; and third, for its great presence worldwide. This research seeks to contribute to the IB literature on two relevant topics: on the internationalization of MNCs from emerging countries and on measuring the degree of internationalization of companies.

The primary contribution of this paper is to offer an innovative way to measure the DOI of a company using the qualitative approach to analyze the annual reports of a company. Annual reports are one of the most reliable sources of business information (Romero, 2016), as it relates to being a source of

qualitative data. Furthermore, with the results of this research, it is possible to identify certain patterns that companies follow in their expansion process.

This article is structured in the following way. First, an overview of Huawei's situation in the world is provided. Second, a review of the literature on DOI, and breadth and depth dimensions are presented. Third, the methodology used for the investigation is explained. Fourth, the results obtained are developed and, finally, the general conclusions and the main implications for business practices are explained.

## **Huawei in the World**

Huawei is a company of Chinese origin whose main activity is to provide infrastructure for information technologies, communications, and smart devices (Huawei, 2020a). The company was founded in China in 1987 and is headquartered in Shenzhen, China (Carrillo-Viveros & Micheli-Thirion, 2017). Regarding its ownership structure, it is a private company owned by its employees (Annual Report, 2018).

The first steps towards internationalization were focused on South-East Asia, Central Asia, and Latin America (Low, 2007). Specifically, its first international foray was the establishment of a Research and Development (R&D) center in Bangalore, India (Huawei, 2020b). The Company currently has a presence in 170 countries (Annual Report, 2018). Given the important international presence of the company, and in order more effectively manage its activities, the Huawei Company divided its operations into eight regions (Table 1):

*Table 1*  
Regions of Huawei

<i>Region</i>	<i>Headquarters</i>
China	Shenzhen, China
Latin America	Brasilia, Brazil
North America	Plano, Texas
Asia Pacific	Kuala Lumpur, Malaysia
Europe	London, England
Southern Africa	Johannesburg, South Africa
Middle East	Cairo, Egypt
North Africa	Cairo, Egypt

Source: Sun, 2009.

As shown in Table 1, Huawei operates globally. Its headquarters serve customers from all regions of the world. Furthermore, the company has 194,000 employees worldwide (Huawei, 2020b), and serves 3,000'000,000 people (Annual Report, 2018). It is important to mention that the internationalization of Huawei has been developed through two essential strategies: the added value of its technological products, and competitive prices (Low, 2007).

Also, is important to mention that Huawei is an important producer of high technology (Hi-tech) products. In its portfolio includes telephones, laptops, tablets, smart clocks, audio devices, and accessories, such as eyewear, backpack, selfie sticks, and wireless mouse (Huawei, 2021). The Hi-tech products that the company offers are very important for international expansion due to this sector is one of the most globalized in the world (Zakery & Saremi, 2020).

## **Literature Review**

### *Degree of Internationalization (DOI)*

Internationalization allows companies to reach other markets to generate new business activities and achieve extraordinary profits (Dalmoro-Costas et al., 2018). When a company expands its operations abroad, it obtains several benefits, such as scale economies and operational skills (Brida et al., 2016).

In this regard, the DOI of a firm is an important issue (Contractor, 2012; Cuervo-Cazurra, 2007; Sullivan, 1994). One of the first authors to define DOI was Ansoff (1957), who defined it simply as “the performance of a company in foreign markets”. Additionally, Ang (2007) notes that the geographical scope of the international presence of a firm is an indicator of the degree of dependence on foreign markets. On the other hand, the DOI is also defined as the expansion through the borders of the regions of the world countries and in different geographical locations (Hitt, Hoskinsson & Kim, 1997). Similarly, another relevant definition is that DOI is the set of operations that facilitate the establishment of links, more or less stable, between a firm and the international marketplace, through the process of increasing involvement and international projection (Root, 1994).

Likewise, DOI refers to the degree to which the sales and operations of a firm are undertaken outside the country of origin (Elango & Prakash-Sethi, 2007). Also, DOI can be classified into two geographical dimensions: regio-

nal diversification and diversification by country (Pan & Tsai, 2012). On the other hand, Thomas and Eden (2004) defined DOI as the degree to which firms expand their sales and operations abroad. Others have defined DOI as the degree to which a firm has international operations. This construct is typically measured by the number of countries in which a firm operates or the number of subsidiaries that a firm has abroad. Specifically, DOI has been operationalized in the literature with some specific indicators, such as Foreign Sales/Total Sales, Foreign Assets/Total Assets, Foreign Employees/Total Employees, Rooms Abroad/Total Rooms, and Transnationality Index (Andreu et al., 2018; Sullivan, 1994).

Is important to mention that DOI is associated with allows investors access to businesses that are not available domestically (Hejazi & Santor, 2010). Therefore, it is assumed that the greater number of countries or subsidiaries where a firm operates, the greater will be the increase in the performance of that firm (Dau, 2011).

In accordance with the review of the literature about the concept DOI, this is a broad term and can be approached from different perspectives. Also, this diversity brings, as a result, various complexities to obtain a single definition. Finally, the study of the DOI as a phenomenon in international business should be approached from a broad perspective that would lead to results, which may unify the terminology about this phenomenon.

#### *About Breadth and Depth in Internationalization*

The DOI has been studied primarily from two main dimensions: “breadth” and “depth”. These approaches are based on more recent elements of internationalization (Contractor et al., 2003). The depth of internationalization is the degree to which internationalization occurs outside the country, for example, the percentage of a company’s annual budget that is considered for international activities. In this regard, depth is measured by financial indicators, including foreign versus total sales, foreign versus total assets, and employees in foreign locations (Abdi & Aulakh, 2018; Brida et al., 2016; Sullivan, 1994). Likewise, breadth refers to the dispersion of offices, branches, and factories located abroad (Velez-Calle et al., 2018). An example of breadth is the number of subsidiaries that a MNC has abroad, the number of employees located in a foreign country, and the number of available rooms abroad (Brida et al., 2016).

In general, MNCs that internationalize use both DOI (breadth and depth) approaches, for example, directing its internationalization to a specific country and committing more resources (depth) or expanding to several countries (breadth) (Kafouros et al., 2012). Although these dimensions explain the same phenomenon, each one approaches it from a different perspective. Depth focuses more on the internal capabilities of the company and the control of resources to internationalize. Breadth has to do with the territorial expansion and growth of the company in its foray into international markets.

## Method

One of the criticisms of qualitative research is that, contrary to quantitative research, the rules, formats, and norms for conducting research do not present homogeneous patterns (Langley & Abdallah, 2011). Qualitative research allows the researcher to understand the phenomenon studied in essence (Arino et al., 2016). This gives qualitative research a methodologically sound perspective to be able to approach various phenomena and understand them in more deeply.

Likewise, this article was approached from a qualitative perspective through the qualitative technique of content analysis. This technique is one of the main ways used to analyze data in a text (Hsieh & Shannon, 2005) that was pertinent to meet the objectives of this research. Furthermore, content analysis has the advantage that it is a technique that, in addition to collecting data, also encodes information qualitative and quantitative.

### *DOI's Dimensions*

It is important to define three essential dimensions to establish the depth-focused DOI measurement in this study. Also important to mention is that these dimensions were determined according to the conceptual meaning of each one, using the *Webster Dictionary* (Webster, 2020). The dimensions are presented in:

Table 2  
DOI Dimensions Focused in Depth

<i>Dimension</i>	<i>Concept</i>
International	The company's operations only focus on one or two countries.
Worldwide	Represents a DOI with a greater presence worldwide, that is, a presence more than international, but less than global.
Global	Refers to the fact that it has operations beyond international and worldwide; it centers the world as a single market. Represents the highest DOI for a company.

Source: Author's elaboration.

The source of information for this study was the Huawei Company's annual reports from 2006 to 2019, a period of 14 years. Annual reports are considered important sources of information about companies (Gerged et al., 2018). From these reports, data can be extracted that provides accurate information about the situation in various areas of the organizations. An annual report is generally made up of two elements: the narrative and the financial statements (El Haj et al., 2020). This article focuses on the narrative element that contains useful information for this study, such as information on shareholders, risks, corporate governance, annual activities, and social responsibility. Various studies have used annual reports as databases to carry out studies in companies (Myšková & Hájek, 2017).

In order to extract the information, the frequency of certain keywords associated with DOI and its breadth and depth approaches was extracted. Frequency is the number of times a certain word appears in a text (Miller et al., 1958). It is important to mention that frequency is an interesting source of information about the words that appear in a text (Baron et al., 2009).

### *Stages of the Investigation*

The sequence to carry out this study was divided into four stages:

*Stage 1:* This stage consisted of searching for Huawei's annual reports primarily on its corporate page. Annual reporting is considered one of the ways that companies make their ideology and perspective known to society (Amernic, 1992; Breeze, 2018). With this regard, 14 reports were identified that covered the 14-year from 2006 to 2019. To ensure the quality of the information,

only official annual reports obtained from the official pages of Huawei were considered.

*Stage 2:* This stage consisted of determining the “depth” of the internationalization for which the content of the annual reports was analyzed. It is important to mention that to measure the degree of internationalization of the company, the words “global,” “international,” and “world” were considered. The word “global” represents the highest degree of internationalization, followed by “world,” and the best degree is represented by the word “international.” Subsequently, to obtain the frequency of these words, each of the words that were present in the annual reports was counted (refer to Table 1).

*Stage 3:* In this stage, the “breadth” of internationalization was measured. Through the content analysis, the presence of various geographic regions such as Africa, Latin America, Asia, Europe, Oceania, the United States, and China, was searched for in the annual reports. Africa, Asia, and Europe were selected as being continents. Latin America and the United States together represented the American continent. Once the words to search for in the text were identified and their frequencies obtained (see Table 3).

*Stage 4:* The purpose of this stage was to be able to corroborate that the results coincided with what Huawei had implemented. Therefore, to better analyze the DOI obtained from the frequencies, evidence was sought that would enable a compare comparison between the results of this investigation with the data obtained from the Huawei annual reports. The results of this stage are detailed in Table 3.

## Results

This section presents the results of the content analysis carried out in Huawei’s annual reports in the 14 years from 2006 to 2019. These will be divided into two parts; the first to measure the DOI’s “depth,” and the second to present the “breadth.” It is important to consider that the results obtained are the consequence of a new way of measuring DOI utilizing a qualitative paradigm.

### *Depth*

This section reveals the results of the total frequencies obtained related to the “depth” of the Huawei DOI, which is shown in Table 3.



Table 3  
Frequency of “Global,” “International,” and “Worldwide” 2006-2019

Word	06	07	08	09	10	11	12	13	14	15	16	17	18	19	Total
Global	9	9	8	12	61	96	88	86	120	129	150	129	132	181	1,210
International	29	18	16	34	17	20	40	28	26	39	39	36	40	38	420
Worldwide	13	13	5	4	9	9	28	32	29	32	22	11	24	53	284
Total	51	40	29	50	87	125	156	146	175	200	211	176	196	272	1,914

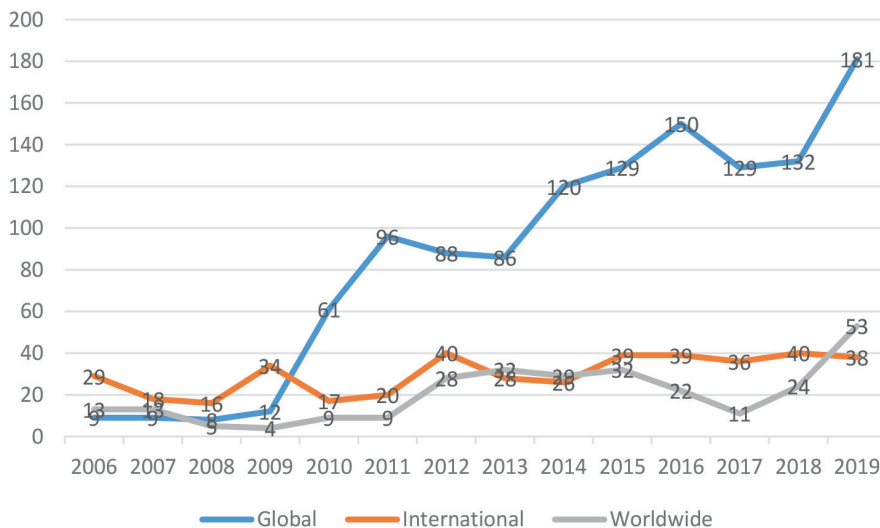
Source: Annual Reports 2006 to 2019.

Table 3 shows the frequencies of the words “Global,” “International” and “Worldwide” in the annual reports analyzed in this investigation. The results of the total frequency indicate, in the first instance, that the word that obtained a lower frequency was “Worldwide” (284), then “International” (420), and finally “Global” (1210). This result indicates that the company has a very “DOI” degree of internationalization since “Global” in this study represented the highest DOI grade.

Regarding the total frequency per year, the results showed an increase of 8.65% in the 14 years from 2006 to 2019. This indicates that the Huawei Company has increased the presence of the words associated with DOI and internationalization, such as “Global,” “Worldwide,” and “International,” in its annual reports; this shows that during this period, awareness and/or strategies related to its internationalization were somehow increased.

Figure 1 presents the trends of the frequencies obtained. It is evident that the one that showed the greatest growth was the “Global” dimension, that is, the one that is associated with the highest DOI in terms of the trends of “International,” and “Worldwide,” which showed, in both cases, a downward trend. This result shows that Huawei Company decision-makers may have somehow steered the company towards further international expansion.

Figure 1  
Trends in Words: Frequency of “Global,” “International,”  
and “Worldwide”, 2006-2019



Source: Annual Reports 2006 to 2019.

### Breadth

Table 2 shows the results of the total frequencies of the geographic areas included in the document. Obtaining these frequencies served to determine the “breadth” of the DOI of the Huawei Company.

Table 4 shows the total frequencies of the geographic regions that were used to measure breadth. The results generally show a significant increase in the presence of the regions in Huawei’s annual reports. This means that the DOI “breadth” increased, in practical terms, due to what was presented in the annual reports; greater importance was given to expansion to different regions of the world.

On the contrary, the regions that obtained the lowest total frequencies were Oceania and Latin America. In the first case, it may be because Huawei is considered part of Asia or it does not represent significant income for the company. In the case of Latin America, the geographical and cultural distance

may be an element that has influenced the lower values of total frequency; however, it is a much higher frequency than Oceania.

*Table 4*  
Total Frequency of Geographical Regions, 2006 to 2019

<i>Geographical Regions</i>	<i>Years 2006 to 2019</i>														<i>Totals By Regions</i>
	06	07	08	09	10	11	12	13	14	15	16	17	18	19	
Africa	10	1	1	3	6	6	14	30	8	17	20	21	39	21	197
Latin America	1	1	3	5	2	6	6	8	7	5	11	5	20	6	86
Asia	4	1	4	5	8	11	13	16	13	15	20	14	14	13	151
Europe	5	3	6	12	11	14	21	23	23	30	34	27	26	42	277
Oceania	0	0	0	0	0	0	1	0	0	0	1	0	0	0	2
United States	1	2	0	2	0	0	17	11	14	12	8	2	8	7	84
Total by Year	21	8	14	27	27	37	72	88	65	79	94	69	107	89	797

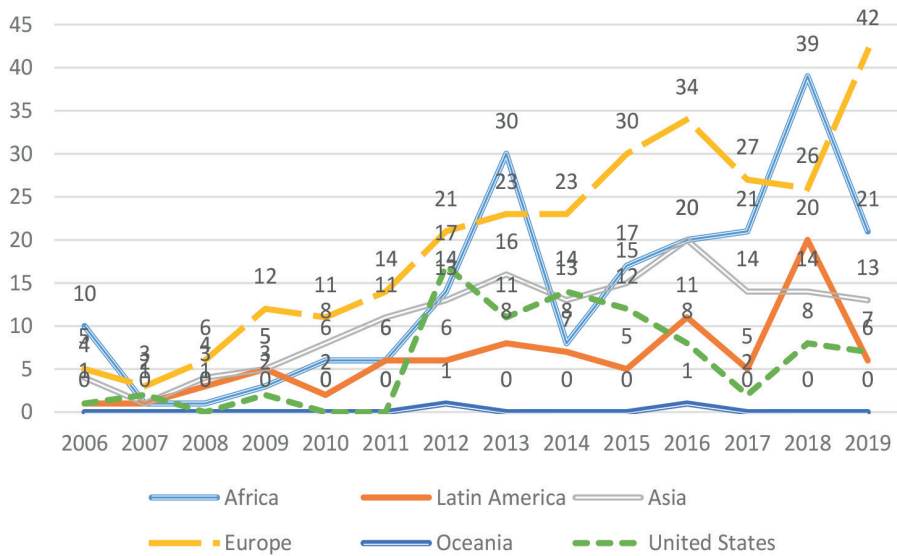
Source: Annual Reports 2006 to 2019.

Figure 2 shows the trends of the total frequencies of the geographic regions. It is observed that the trends of the total frequencies behave in an ascending way. This is an indicator that the DOI's "breadth" increased, meaning that it can be considered that Huawei visualized in its annual reports an increase in its presence in international markets.

The region with the highest upward trend was Europe. This region has been characterized as being one of the main destinations for the company's investments in recent years (Annual Report, 2019).

A comparison of the results of the trends that have followed the DOI breadth and frequencies and the two indicators of growth of Huawei, such as employees and revenues are shown in Figure 3. This comparison allows the results of the DOI to be related to the expansion of the company in order to obtain a better vision of the impact of the DOI on the development of the Huawei Company.

Figure 2  
Trends in Words: Total Frequency of Geographical Regions, 2006 to 2019



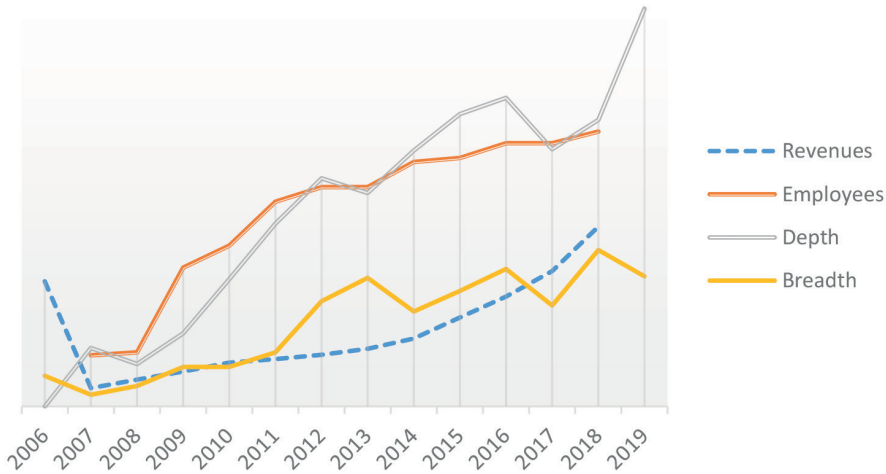
Source: Annual Reports, 2006 to 2019.

As can be seen in figure 3, the four trends show an upward pattern. This is important given that it shows that a higher DOI (breadth and depth) affects the growth of the company. This is associated with the DOI literature wherein it is stated that there is a benefit to a higher DOI in the expansion of the company (Brida et al., 2016). Furthermore, it is possible to infer that a company is more international as its size increases.

## Conclusion

The main objective of this paper was to measure the DOI of the Huawei Company, a Chinese multinational technology company. The general conclusion is that the DOI has increased in the period studied (2006 to 2019); that is the company has increased its presence and commitment of resources in the international arena. Regarding the two DOI approaches, breadth and depth, the results show that depth tended to be more incremental than breadth. This leads to the conclusion that the Huawei Company was more concerned with

Figure 3  
Trends in Words: Frequencies (Revenues, Employees, Depth and Breadth)



Source: Annual Reports 2006 to 2019; and BBC, 2019.

strengthening its internal internationalization capabilities rather than with gaining a greater presence in different geographical regions.

Another important conclusion is that comparing breadth and depth trends with company growth indicators, such as employees and revenues are somewhat related since the four trends (Figure 3) show an increasing trend. It is important to understand how the relationship between DOI and the indicators used occurs from a qualitative perspective.

This paper is the first of a new proposal to measure DOI qualitatively using annual reports that have been a key to conducting studies in the management area (Romero, 2016). Therefore, it is important to be able to carry out the comparative articles with a greater number of companies and with different companies at a global level. It is relevant to be able to establish a comparison of this article with other forms and indicators to measure DOI to understand this phenomenon more fully.

It is important to discuss the importance of annual reports as sources of information. These reports show the situation of a company over a period of

time (generally one year). In this case, the annual reports were a vital element to obtaining first-hand information about the Huawei Company. This allowed the authors to structure and achieve the central objective of this research, given the difficulty encountered in being able to contact personnel related to Huawei's international areas.

Also, considering the discussed results of this research is relevant to mention that the internationalization of Huawei was not only given for its annual reports. Huawei has centered its strategy on recruiting native employees of the host countries. Also, the company has considered it important the understanding of local culture (Deng et al., 2018).

Finally, using word frequencies is an innovative way to measure DOI. This form of measurement has been used in phenomena from other areas, mainly linguistics (Baron et al., 2009). Using frequencies to qualitatively study phenomena in the business arena is something important given that the contributions and implications for the various theories of business can be increased.

### **Practical Implications**

This research has several implications for practice. The first has to do with decision-making, given that this methodology can be a valid and viable alternative for managers because the information can be obtained from open sources and can be used to create growth and make internationalization decisions. The second is related to the strategies that companies can follow to internationalize, for example, depending on the DOI, they can decide what form of entry they will use to enter a certain market.

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