

Role of internal resources on the competitive advantage building in a knowledge-intensive organisation in an emerging market

Role of internal resources

Norbey Amaya

Department of Management and Business, Universidad Del Rosario, Bogotá, Colombia

César Augusto Bernal-Torres

Department of Innovation and Entrepreneurship, Universidad de La Sabana, Chía, Colombia, and

Yoni W. Nicolás-Rojas and Tamara T. Pando-Ezcurra

Research Center, Innovation and Sustainable Entrepreneurship, Escuela de Educación Superior Tecnológica Privada La Pontificia, Ayacucho, Perú

Received 26 January 2022
Revised 10 April 2022
Accepted 1 May 2022

Abstract

Purpose – This study aims to analyse the way the internal resources and their attributes contribute to the competitive advantages in an intensive organisation in knowledge of the pharmaceutical industry in an emerging market.

Design/methodology/approach – This is a qualitative case study focused where the NVivo software was used for information analysis and thematic analysis.

Findings – The outcomes showed that from the VRIO framework (value, rarity, imitability and organisation), the plant and equipment and the technical knowledge of its workers are the resources that, due to their attributes, especially the rare, those that grant an advantage competitive position compared to other companies in its sector. Those findings highlight that the resource-based view (RBV) is a good approximation to explain the construction of competitive advantage (CA) and, in addition, the relevance of rare attribute in pharmaceutical companies was confirmed.

Practical implications – The study points out empirical evidence on the relevancy of RBV, from the VRIO framework and the competitive profile matrix (CPM) for the analysis of the management of organisations from the emerging market (economy) perspective. The study also provides competitive advantage analysis tools with which managers can identify strategic resources for their companies.

Originality/value – The VRIO framework and CPM were integrated in the study to analyse the role of internal resources and their attributes in achieving CAs. This integration is the first time that it has been carried out in companies in the context of an emerging market.

Keywords Knowledge-intensive organisations, Resource-based view, Strategic resources, Competitive advantage, Thematic analysis, Emerging markets

Paper type Research paper

© Norbey Amaya, César Augusto Bernal-Torres, Yoni W. Nicolás-Rojas and Tamara T. Pando-Ezcurra. Published by Emerald Publishing Limited. This article is published under the Creative Commons Attribution (CC BY 4.0) licence. Anyone may reproduce, distribute, translate and create derivative works of this article (for both commercial & non-commercial purposes), subject to full attribution to the original publication and authors. The full terms of this licence may be seen at <http://creativecommons.org/licenses/by/4.0/legalcode>

Funding: The process and development of study's field work were supported by a grant from the University of Rosario.



1. Introduction

According to the Organisation for Economic Cooperation and Development (OECD, 2001) and the National Science Board (National Science Foundation National Centre for Science and Engineering Statistics [NSF/NCSES], 2008) one of the sectors that make up the industry of intensive knowledge is the pharmaceutical ones. It is estimated that for the year 2023, the size of the global pharmaceutical market will be beyond US\$1.5bn (Clancy *et al.*, 2019). In Latin America, Colombia is a medium pharmaceutical market in terms of turnover, the country is ranked the fourth position in the region behind Brazil, Mexico and Argentina (EMIS, 2019). Referring to the national industry, it is strongly influenced by the regulation and dominance of multinational pharmaceutical laboratories.

Although knowledge-intensive organisations (KIOs) are main players in the economy (Liu *et al.*, 2020), for their significant contribution to the global economy's growth (National Science Board National Science Foundation [NSB/NSF], 2022), their strategic management is a challenge in the academic area, as well as in the corporate world (Rehman *et al.*, 2020). Rehman *et al.* (2021) indicate that their study has been really limited. For Murphy and Seriki (2021), little attention has been paid to study these companies, which is confirmed by Bandarian (2020), who affirms that more studies are required to explain the construction of competitive advantage (CA) in those businesses, mainly in emerging markets (Mathew *et al.*, 2021).

In relation to the resource-based view (RBV), over the past 30 years, it has acquired major importance in the organisational context (Barney *et al.*, 2021). This, in particular, is one of the main theories in strategic management area (Maket and Korir, 2017), especially to explain the achievement of CA (Barney and Mackey, 2018). In a complementary manner, the literature review has demonstrated the relevance of using the RBV as theoretical framework for the study of the KIO, because it allows us to analyse the different resources that those companies use to compete in the industry (Martín de Castro *et al.*, 2007). However, from this theoretical perspective, little has been studied of the resources that contribute to the constructions of CA in that type of organisations (Harvey *et al.*, 2017).

Although, the RBV has been implemented to analyse the CA, the major part of the investigations describes the relationship between a resource and its performance, which is assumed as a CA (Newbert, 2008). Consequently, the resources of the company are progressively defined as a result or in associated terms with the performance (Sigalas *et al.*, 2013). Although, it is recognised that CA and performance are conceptually distinct (Barney, 1991). In this way, Gerhart and Feng (2021) emphasise the need to undertake empirical research on how to obtain CA.

On another hand, the value, rarity, imitability and organisation (VRIO) framework has received a lot of attention from academics' side to analyse the CA; likewise, this has been widely used in many empirical studies (Barney and Mackey, 2018). However, there is no clarity on how to use it, as the majority of the studies have a conceptual focus and do not provide some information on how to manage it (Lin *et al.*, 2012). Arbelo *et al.* (2020) highlight the importance of conducting studies that have a purpose of enriching the empirical impact on the RBV, in particular from the analytical VRIO framework (Gutiérrez-Martínez and Duhamel, 2019).

2. Theoretical background

2.1 Resource-based view, the value, rarity, imitability and organisation framework and the attributes (valuable, rare, inimitable and organised)

One of the purposes of RBV is to identify the way companies use their internal resources to build CA (Barrales-Molina, *et al.*, 2013). Regarding the definition of resources, Barney (2014) points out that the tangible and intangible assets that companies own or have access to are classified into three capitals (Barney, 1991):

-
- | | |
|---|-----------------------------------|
| <ol style="list-style-type: none"> (1) human: training, experience, intelligence and the vision of the managers and employees of the company; (2) organisational: formal and informal planning, corporate structure, control and coordination systems, and the informal relations between the internal groups of the company and their environment; and (3) physical: physical technology, plant and equipment, geographical location and raw materials. | Role of internal resources |
|---|-----------------------------------|
-

From the RBV, a resource is strategic when it fulfils four attributes (valuable, rare, inimitable and organised), which can contribute to the success of the CA (Barney, 2014). Those attributes constitute the VRIO framework (Table 1).

Table 1 shows the four attributes of the VRIO framework; they are described as the following (Barney and Hesterly, 2019):

- (1) *valuable*: resources that are a strength for the company;
- (2) *rare*: resources that unique between competitors;
- (3) *inimitable*: resources that difficult get by the competitors; and
- (4) *organisation*: resources that are efficiently exploited by the company.

2.2 The resource-based view and the competitive advantage

In the current study, CA is understood from the RBV (Barney, 1991), which is differentiated from the organisational (Sigalas et al., 2013). For that reason, it is decided to use the developed concept by Sigalas et al. (2013), who defined it as the exploitation above the industry's average of market opportunities and the neutralisation of competitive threats. Thus, terms used for its interpretation are the following:

- *opportunity*: set of positive realities or circumstances (Dutton and Jackson, 1987), those that can be used through combination and deployment of resources (Newbert, 2008);
- *threat*: negative situations, which involve mixing resources in various ways for the organisation to be able to defend itself (Newbert, 2008); and
- *competitiveness*: comparison between the main company and other companies that belong to the same strategic industry (Sigalas and Papadakis, 2018).

This is giving the fact that the purpose of recognising CA is to identify a benchmark against which competitors are related to (Barney et al., 2021). To analyse the competitiveness, the CPM (David, 2011), from a qualitative perspective, due to the fact that it is one of the strategic tools, most popular in the academic world (Bhattacharjee and Dey, 2015), that supports managers in their decision-making process. Likewise, it provides necessary information about the CA

Valuable?	Rare?	Costly to imitate?	Exploited by organisation?	Competitive implications
No	–	–	No	Competitive disadvantage
Yes	No	–	–	Competitive parity
Yes	Yes	No	–	Temporary competitive advantage
Yes	Yes	Yes	Yes	Sustained competitive advantage

Table 1.
The VRIO framework by Barney (2014, p. 140)

(Bygrave and Zacharakis, 2011), as it allows to identify the company's competitive position compared to the other competitors of a particular industry (León *et al.* 2020).

The CPM seeks to identify the strengths and weaknesses of company's main competitors (David, 2011), from an evaluation of the critical success, that refers, for this research, to those factors that are of importance in the operation of the industrial sector. In addition, to provide significant advantages to the organisations that belong to the same (Bhattacharjee and Dey, 2015). The foregoing is based on one of the four categories suggested by Larsen *et al.* (2003), who call the specific factors of the resource, which includes among other assets, the strategic resources and their attributes (valuable, rare, inimitable and organisation) (Barney and Hesterly, 2019), as they allow companies to exploit the opportunities around them (Nason and Wiklund, 2015).

On the other hand, Barney and Hesterly (2019) point out that the CA of a company can be two types:

- (1) temporal competitive advantages: they are faced when competitors duplicate them and remain a short period of time; and
- (2) sustained competitive advantages: it is the opposite.

However, it does not necessarily imply that the advantage obtained by a company remains indefinite (Barney and Mackey, 2018), nor does it refer to specific period (Barney *et al.*, 2021). The foregoing, because it depends exclusively on the possibility of competitors to duplicate them (Barney and Hesterly, 2019).

2.3 The resource-based view and knowledge-intensive organisations

Regarding the definition of this type of firm, there is no consensus (Edvardsson *et al.*2021). In this paper, we follow the definition of Makani and Marche (2010), who a KIO as organisations "where sophistication and complexity are given for the reason that the worker knows and does, which means that 'experienced' workers and 'innovators' define the way out and success" (p. 72). This type of organisation is characterised by using different kinds of resources (tangibles and intangibles), to successfully compete in knowledge-intensive sectors (Martin de Castro *et al.*, 2007), which is confirmed by Murphy and Seriki (2021), who manifest the relevance of the RBV as the reference framework to analyse the KIOs.

On the other side, the studies carried out in the KIOs have made relevant contributions, especially, in the general development of the RBV (Baia *et al.*, 2020). Also, this perspective has been used as a reference framework to analyse this type of companies by Almor and Hashai (2004), Baia *et al.* (2020), Herrmann (2008) and Paixao Garcez and Sbragia (2013).

3. Methodology

This design matches to an intrinsic qualitative case study (Stake, 2005). The case study has been making important moves in scientific research, due to the fact that it allows the development of theory from the inductive process (Eisenhardt and Graebner, 2007). Welch *et al.* (2011) affirm that the case study has prevailed because of its ability to generate new theoretical concepts.

Regarding the case study's selection, the company named in this document "EFC Company" was chosen, because it is a pioneer in drugs manufacturing in the country and providing generic drug maquila service since the decade of the 19th (1990s) of the 20th century, with it headquarter in the capital city. A case is "paradigmatic when it is considered the exemplar for a certain class" (Given, 2008, p. 697).

The techniques used to gather the information were a semi-structured interview (Patton, 2001) and the documentary analysis (Mogalakwe, 2006). A triangulation was carried out between participants (directors and employees) and types of data (semi-structured interviews and document review) (Creswell, 2015).

The qualitative data obtained between 2018 and March 2022 were the following:

- the audio of the interviews carried out with the technical manager (TM) and two people who are part of the regulatory affairs (RA) and galenic development (GD) (182 min in total);
- the written transcription of this audio; and
- the documents of the organisation that were obtained during the study's field work (internal and external files – 401 pages in total).

The data interpretation was developed with the support of the *software* NVivo (12th version) (Jackson and Bazeley, 2019). Thematic analysis was applied (Amaya *et al.*, 2021; Braun and Clarke, 2006). So, for the information codification process, a deductive code creation was used (Arbeláez and Onrubia, 2014). During the process, the following categories were established to guide the analysis: resources (intangibles and tangibles), capital (human, organisational and physical), attributes (valuable, rare, inimitable and organised), threats and opportunities.

To analyse the competitiveness, the CPM was used, because it is one of the most popular tools in the academic field (Bhattacharjee and Dey, 2015), and it provides necessary information on CA (Bygrave and Zacharakis, 2011). Thus, the steps to carry out the matrix were based on the approach of David (2011). They are:

First step: Identification of the companies considered as direct competitors of the focal company; for that, the proposal developed by Peteraf and Bergen (2003) was used, which is found through the resource-based vision, and that also allows analysing all kinds of competitive environments, especially those that are turbulent and complex, as is the case in the pharmaceutical industry; comparison of competing companies by using the market-correspondence indicator, with the purpose of evaluating whether or not these companies satisfied the same needs of the customers of the focal company; comparison of the competitors' set of assets through the means of the similarity of resources-equivalence capacity indicator with the ones of the focal company, in terms of its capacity to satisfy similar customers' needs. These indicators allow competitors to be classified into four quadrants, namely, Quadrant I, direct rivals-substitutes; Quadrant II, potential direct rivals-latent substitutes; Quadrant III, weak competitors–non-competitors; and Quadrant IV, vertically differentiated–vertical substitutes.

Second step: The specific factors of the resource were used, which are made up of the strategic assets their attributes (Larsen *et al.*, 2003). The above-mentioned, as it is not in essence the strategic resource itself that influences the achievement of CA, but its attributes that make differences between companies (Victor, 2014). Those were identified from the VRIO framework (Barney, 2014). It should be noted that these steps are not contemplated in the proposal developed by David (2011). That is due to the fact the author proposes the critical success.

In the third step, the weight of strategic resources was determined, which is their percentage's importance that added together cannot be more than 100%. That activity was carried out through a double entry matrix, where the incidence's degree of each of these resources on the others was initially identified. This is given the fact that the resources are interconnected (Barney *et al.*, 2021). These are called co-specialised that are characterised by

their way of joint use, which makes them more productive (Barney, 2018). Thus, an evaluation value was assigned to the things following these codes above: 1 – there is an influence, and 0 – there is no influence. Then, for each one of the strategic resources, a simple average was calculated, adding the scores of those resources, then dividing them by their total.

In the fourth step, the attributes were graded (valuable, rare, inimitable and organised) that are extracted from the strategic resources identified earlier. At this level, a scale was used to evaluate each one of them of the company, namely, 3 major strength, minor strength, 2 minor weakness and major weakness. We referred to the secondary information collected from the pharmaceutical industry to compare and evaluate the company compare to the strategic standard of the industry. This task of processing the data was brought out from the Nvivo Plus 12 program.

The fifth step was developed in two stages. In the first, the individual score of each company was calculated by multiplying the qualification code by the weight of each strategic resource. And, for the second, we proceeded by adding the weighted scores of the resources, to determine the total weighted score of each, and from that, we obtained the final results shown by the organisations that obtain a high score. It means that these companies have a higher level of strength compared to the others and have a CA.

An executive summary of the outcomes was sent back to the organisation under this study, with the purpose of involving the participants in the identification of the emerging patterns, theories and explanations. In this study, the criteria for the research of qualitative studies (COREQ) of the researchers Miklian and Medina Bickel (2017) were incorporated. This was with the purpose of guaranteeing transparency, rigor and exhaustiveness.

4. Results presentation and discussion

4.1 Strategic recourses and their attributes that contribute to the construction of the competitive advantage in the EFC Company

About the resources inventory and its attributes that the EFC Company owns, Table 2 contains the actives of the studied company in three capitals: human, organisational y physical, according to the classification proposed by Barney (1991).

Table 2 shows that the plant and equipment of the physical capital and the technical knowledge of the human capital are the strategic resources of the Company EFC, as they comply with the four attributes.

Regarding the plant and equipment, this tangible asset is a strength for the organisation under analysis, it is challenging to obtain and to be copied by the competitor and it is being exploited in an efficient way, which contributes to the CA generation (Table 3).

As it can be observed in Table 3, the EFC Company builds SCA from the attributes extracted from the resource plant and equipment. They are described below, as indicated by TM and GD:

Valuable attribute: [...] then we have an advantage here, it is that our teas are dedicated exclusive [...]. They look for us, because they know that here, it can be done, that we have all the production part, dedicated to that (transcription TM, reference 2).

Rare attribute: [...] not many companies in the country have the availability of having separated factories (transcription GD, reference 1).

Inimitable attribute, the competition is hardly in the ability to copy: We work under a high dynamic, moving our operations to be focused on customer satisfaction. So, they can hardly copy us (transcription GD, reference 1-2).

Capital	Resource	Valuable	Rare	Inimitable	Organised	Role of internal resources
Human	Technical knowledge	Yes	Yes	Yes	Yes	
	Experience	Yes	No	No	Yes	
Organisational	Human resource (employees)	Yes	No	Yes	Yes	
	Managers' vision and employees of the company	Yes	No	No	No	
	Training	Yes	No	No	Yes	
	I + D activities	No	No	Yes	No	
	Strategic planning	No	No	Yes	No	
	Incremental innovation	Yes	No	No	No	
	Reputation	Yes	No	Yes	No	
	Quality management	Yes	Yes	No	No	
	Customers relation	Yes	Yes	Yes	No	
	Informal relations- Internal groups and their surrounding	Yes	No	Yes	No	
	Leadership	Yes	No	Yes	No	
	Business model	Yes	Yes	No	No	
	Human resources' practices	Yes	No	No	No	
Physical	Actives of technology and information	Yes	No	No	No	
	Plant and equipment	Yes	Yes	Yes	Yes	
	Access to raw materials	Yes	No	No	Yes	
	Geographical location	Yes	No	No	Yes	

Table 3.
Attributes (valuable, rare, inimitable and organised) of the resource plant and equipment and its competitive implication, elaborated by the authors from [Barney \(2014, p. 140\)](#)

Resource	Valuable	Rare	Attributes		Competitive implications
			Inimitable	Organised	
Plant and equipment	13 references in 4 documents Yes	5 references in 4 documents Yes	2 references in 1 document Yes	10 references in 3 documents Yes	Sustained competitive advantage

Organised attribute refers to the fact the company has established some aspects that make the exploitation of the resource easier: Factory and laboratory (transcription TM, reference 2).

Regarding the technical knowledge of the human capital, this intangible asset is valuable, and at the same time, it is difficult to get and copy by the competition and be organisationally exploited by the analysed company, which contributes to the CA generation ([Table 4](#)).

Table 4 indicates that the EFC Company constructs the SCA starting from the attributes that are extracted from the technical knowledge. this becomes a manifest, through GD and RA:

Valuable attribute: Which is specific for [...], that we have been doing the same for some time, developing this type of medicine (transcription GD, reference 2).

Rare attribute: [...] we are the ones who have the complete portfolio of [...], in three pharmaceutical forms each (transcription GD, reference 2).

Inimitable attribute, it is difficult for the competition to be in the posture to copy: The products that we manufacture as such, the documentary resource, all the technical knowledge that exists, embodied in documents that become the bottom line to achieve goals (transcription RA, reference 4).

Organised attribute refers to the fact that the company owns some established aspects that favour the exploitation of the resource: Because all that knowledge, that expertise brought by people from outside, is what makes us innovate, that processes are changed (transcription RA, reference 4).

The results obtained in this study support the outcomes and proposals of Barney (2014) in the way in which the attributes (valuable, rare, inimitable and organised) that are part of the strategic resources contribute to the CA's construction, due to the fact that these attributes allow companies to exploit opportunities from the surrounding (Nason and Wiklund, 2015). However, the lack of clarity about how internal resources contribute to the construction of a CA continues to be pointed out (Newbert, 2008).

This is due to the confusing and unclear way of conceptualising CA (Prasad, 2020), which has generated the fact that the company's resources are often defined in terms associated with organisational performance and not related to the competitive (Sigalas et al., 2013). Although, it is recognised that the CA is conceptually different from organisational performance (Ray et al., 2004), which is confirmed by Sigalas et al. (2013), who developed a competitive rule that is characterised by not including performance antecedents.

4.2 Resources and attributes that contribute to the construction of competitive advantages with EFC Company

The process to interpret the way in which strategic resources and their attributes contribute to the construction of the competitive advantage of the Company EFC was developed in three stages, namely:

- (1) recognise the threats and the opportunities;

Table 4. Attributes (valuable, rare, inimitable and organised) of the technical knowledge and its competitive implication, elaborated by the authors from Barney (2014, p. 140)

Resource	Valuable	Rare	Attributes		Competitive implications
			Inimitable	Organised	
Technical knowledge	4 references in 3 documents Yes	2 references in 2 documents Yes	1 reference in 1 document Yes	4 references in 1 document Yes	Sustained competitive advantage

-
- (2) identify the competition according to the similarity of resources endowment (Peteraf and Bergen, 2003); and
 - (3) compare the organisation under study with its competitors through the CPM developed by David (2011).

Role of internal resources

In the first step, the opportunities and threats of the EFC Company were recognised (Table 5).

Effectively, the references (the ones that realise the level of foundation of the qualitative analytical category took into consideration) regarding the opportunities of the EFC Company, which are reported in the Table 5, refer to the importance of the regulatory framework and the maquila's service, as indicated by TM and RA:

Regulatory framework: Well, the fact of having two factories, [...] from 2013 a rule came out saying no, [...] in one factory and [...] in another. One of the strengths that the EFC Company had, from the beginning, since the existence of EFC Company, both factories are separated (transcription TM, reference 2).

Maquila service: So, the laboratories started to say, let's go to the EFC Company assembly for us, then I will stay with [...] and that the EFC Company produces for me the [...]. Thus, we started with several clients (transcription AR, reference 2).

Lastly, regarding the threaten situations of the EFC Company, in Table 5, it is highlighted that the majority of the references are associated to the competition (low prices rivalry), as indicated by TM:

Competition (low prices rivalry): Because right now the fight against India, China is not easy (transcription TM, reference 1).

In the second step, the identification of the competition of EFC Company was made according to the similarity of resources endowment (Peteraf and Bergen, 2003). In this way, two companies were identified as competing directly and latent substitutes with the organisation under study (Table 6). This data processing exercise is supported by the NVivo Plus12 program.

Table 6 indicates that the competitors of the EFC Company are located in Quadrant II, which means that those companies do not satisfy the same needs of the target market for the study, but they have a high score in terms of similarity of the similarity of resources-capacity equivalence. Regarding the market needs, the pharmaceutical companies CSAS and STGF are oriented to identify other types of market needs. This is evidenced by the following fragments of our empirical material:

EFC Company: dedicated to maquila [...] under an exclusive production scheme (EFC Company document, reference 3).

Company EFC	Opportunities from the environment	Regulatory framework	11 references – 3documents
		Maquila service	6 references – 3 documents
	Threats from the environment	Low price competition – rivalry	8 references – 2 documents

Table 5. Opportunities and threats of the EFC Company, established by the authors from Dutton and Jackson (1987)

CSAS Company: specialized in the development, manufacture and marketing of pharmaceutical and cosmetic products for human and veterinary use (CSAS Company document, reference 3). In addition, it provides a comprehensive maquila service with the development of its own brands (CSAS Company document, reference 1).

STGF Company: dedicated to the production of medicines and supplements and, with a cosmetics production plant (STGF Company document, reference 1). It is a leading national company in the pharmaceutical and cosmetics maquila industry (STGF Company document, reference 1).

In relation to the equivalence capacity of the CSAS and STGF companies [Table 7](#) shows the resources that are common among the companies that are potential direct rivals of the EFC Company.

[Table 7](#) shows the common resources between the EFC, CSAS and STGF Companies, where it is evident that the analysed companies have a high score in terms of similarity of resources-equivalence capacity. The foregoing, given that these pharmaceutical companies stand out for having been in the market for more than 20 years, as well as the relevance that the knowledge and skills of their employees have within the organisation to develop innovative products and services. They are leading companies in the maquila service. This, given that they have specialised plants and equipment to develop, in particular, a certain type of drug. Said machinery and equipment are characterised by being duly certified and, furthermore, by being located in the capital of the country.

And, in the step, the CPM was used; [Table 8](#) shows the EFC Company against its main competitors, taking into account its strategic resources and attributes. It is estimated to use the concept proposed by [Johnson et al. \(2008\)](#) on the critical success factors, as, for them, they

Table 6.
Framework to identify the competitors of the EFC Company, elaborated by the authors from [Peteraf and Bergen \(2003, p. 1034\)](#)

Market's needs	Yes No	Quadrant IV Quadrant III Low	Quadrant I Quadrant II - CSAS and STGF companies High Equivalence capacity
----------------	-----------	--	--

Table 7.
Common resources between EFC, CSAS and STGF companies, prepared by the authors

Capital	Common resources	Companies – 2022		
		EFC	CSAS	STGF
Human	Technical information-knowledge and abilities	Yes	Yes	Yes
	Trajectory experience in the industry	Yes	Yes	Yes
Organisational	Human resources (employees) – relevant	Yes	Yes	Yes
	Management of quality – certification	Yes	Yes	Yes
	Marginal innovation – products and services	Yes	Yes	Yes
	Maquila service business model	Yes	Yes	Yes
Physical	Factory and specialised machines	Yes	Yes	Yes
	Geographical location in the capital of the country	Yes	Yes	Yes

Strategic resources	Attributes	Weight (%)	Companies			Role of internal resources
			EFC	CSAS	STGF	
Plant and equipment	Valuable: exclusive for manufacturing	13	4	4	4	Table 8. CPM of the EFC Company against its main competitors, elaborated by the authors
	Rare: independents, separated geographically	12	0.54	0.54	0.54	
			4	3	3	
	Inimitable: work under a high dynamic	12	4	4	4	
			0.46	0.46	0.46	
Organised: exploited in an efficient way	13	4	4	4		
Technical knowledge	Valuable: specific about the medicines that they are producing	12	4	4	4	
			0.54	0.54	0.54	
	Rare: complete portfolio of medicines	12	4	3	3	
			0.46	0.35	0.35	
	Inimitable: reflected in the products they manufacture with their respective documentation	13	4	4	4	
0.54			0.54	0.54		
Organised: Pharmaceutical forms diversification	12	4	4	4		
Total			4.0	3.7	3.7	

are some factors that provide significant advantages. That is interpreted as the strategic resources and its attributes.

The results of the CPM presented in [Table 8](#) show that the classification among the companies analysed is narrow. However, Company EFC has a high score compared to the others, which is related, specially to the rare attribute of strategic resources plant and equipment (independents, separated geographically) and technical knowledge (complete portfolio of medicines). Taking into account the above-mentioned, it can be said that the company under study has a CA compared to its main rivals ([Bygrave and Zacharakis, 2011](#)). As TM and RA indicate:

Plant and equipment (rare): Well right now, it is to have both factories separated, because there no laboratory that has this geographical separation here in the country (transcription TM, reference 2).

Technical knowledge (rare): We are the number one maquila factory of [...] in the country [...]. We are the one who have the complete portfolio of [...] in three pharmaceutical forms each. The competitors, due to normative issue, own one portfolio of [...], but not both (transcription RA, reference 1).

The previous findings confirm that the highlighted attributes of the strategic resources (factory and equipment and technical knowledge) contribute the construction of CA of the EFC Company compared to its competitors ([Figure 1](#)).

In [Figure 1](#), it is testified how the EFC Company has a CA compared to its competitors, namely, first of all, the organisation under study uses the opportunities of the surrounding, because the manufacturing factories are independents; it means that the production space is geographically isolated to avoid cross-contamination, according to the country regulatory framework ([Resolución 3028 de, 2008](#)), a condition that is used to have business model focused on the maquila service.

Secondly, it neutralises the threats from the competition (low prices rivalry), by the production factory and the short amount time of manufacturing. Likewise, they use

technical knowledge to diversify the pharmaceutical forms and offer a wide portfolio of products to the customers. These results are consistent with proposal of [Arbelo et al. \(2020\)](#), who affirm that the competitive position of a company is conditioned by the strategic resources and their optimal use to create CA.

The results also show that the physical capital contributes to the construction of the CA in the EFC Company, which agrees with findings of the studies on the topic of [Sachitra and Chong \(2018\)](#). This outcome draws attention because of the tangible assets usually do not meet all the necessary attributes of a strategic resource ([Čater and Čater, 2009](#)), and the advantage earned by the companies is not enough in the long term, as rivals can buy identical tangible ([Rockwell, 2019](#)). The finding that was controversial by one of interviewees, as it is shown in the results of [Table 3](#). Thus, regarding the discussion around the relevance of tangible and intangible resources in the construction of CAs, there is no consensus ([Ying et al., 2019](#)). In that logic, [Ying et al. \(2019\)](#) affirm that companies should focus on the acquisition of both types of resources, regardless of their characteristic (tangible or intangible).

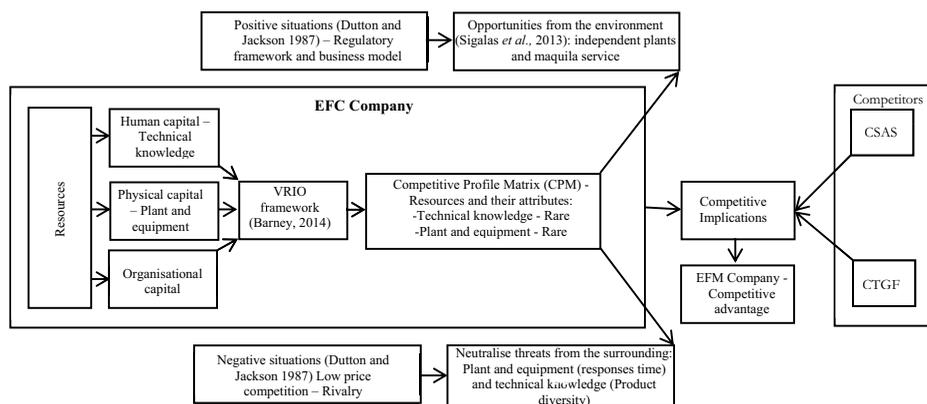
The findings related to the rare attribute show consistency with what is indicated in the literature on the importance of the resources in which this type of attribute predominates and the achievement of competitive advantages ([Baia et al., 2020](#)). This is because, as [Ferreira and Fernandes \(2017\)](#) state, rare assets are limited and are characterised by being difficult to own, and in some cases, impossible to obtain. In the case of KIOs, [Baia et al. \(2020\)](#) highlight the strategic relevance of rarity as an attribute in this type of organisation. In this sense, [Cho et al. \(2021\)](#) highlight the importance of having and effectively using unique and rare resources.

5. Conclusions

The results gained in this study highlight the practical value of the RBV, of the VRIO framework (valuable, rare, inimitable and organised) and of the CPM, to identify the way in which internal resources contribute to the achievement of CA. In this logic, the application of the VRIO framework determined that the plant and equipment and technical knowledge are strategic resources KIOs, and also, it allowed to recognise that are extracted from those strategic resources contribute to the construction of advantages compared to its competitors.

Regarding the valuable attributes of the plant and equipment resource, it is an organisational strength for the company, due to the fact that it has exclusive factories for the

Figure 1. Competitive advantage of the EFC Company compared to its competitors, elaborated by the authors



production of medicines; the attribute rare, because, it is the only company in the country that owns independent factories, geographically separated; the inimitable attribute because the established mechanisms in the factories allow the short amount of time for the production, and the organisation attribute, which favours the exploitation of the manufacturing factories.

The valuable attribute of the technical knowledge resource is an organisational strength from the workers' experiences; the rare attribute because only EFC Company owns a complete portfolio of medicines, that it manufactures thanks to the technical knowledge that it possesses about the topic; the inimitable attribute due to the fact that the technical knowledge is reflected in the products that are manufactured with their respective documents; and the organised attribute because the technical knowledge and expertise of the workers are used efficiently in the diversification of pharmaceutical forms.

On the other hand, using strategic resources and their attributes as critical success factors in the CPM, it was discovered that EFC Company holds CAs compared to its competitors, due to the fact it exploits the opportunities of the surrounding, and it neutralises the threats of the competitors, by means of the attributes of its strategic resources, namely:

- production factory (rare attribute: independent and geographically separated); and
- technical knowledge (rare attribute: complete portfolio of medicines).

Therefore, the rare attribute stands out above the others (valuable, inimitable and organised) in the construction of the CA.

The current research is relevant in the KIOs management because:

- it allows understand and identify different types of attributes that hold strategic resources, to implement some differentiation strategies by improving the competitiveness of the company; and
- it contributes to properly managing the assets that this type of organisation owns, as it is the possession and the proper use of the strategic resources and their attributes that contribute to the CA construction.

It is worth indicating that, from its case study's approach, the results found here are not generalisable to companies based in other countries and operating in other industries, but they are a benchmark for the companies in similar contexts. It is recommended for the future investigations to carry out additional research in other cases or, also, in different types of organisations, taking into consideration the criteria established in this work.

References

- Almor, T. and Hashai, N. (2004), "The competitive advantage and strategic configuration of knowledge-intensive, small- and medium-sized multinationals: a modified resource-based view", *Journal of International Management*, Vol. 10 No. 4, pp. 479-500.
- Amaya, N., López-Santamaría, M., Acosta, Y.A.C. and Hinestroza, M.P.G. (2021), "A step-by-step method to classify corporate sustainability practices based on the signaling theory", *MethodsX*, Vol. 8-12. p. 1.
- Arbeláez, M. and Onrubia, J. (2014), "Análisis bibliométrico y de contenido. Dos metodologías complementarias Para el análisis de la revista colombiana educación y cultura", *Revista de Investigaciones*, Vol. 14 No. 23, pp. 14-31.
- Arbelo, A., Arbelo-Pérez, M. and Pérez-Gómez, P. (2020), "Profit efficiency as a measure of performance and frontier models: a resource-based view", *BRQ Business Research Quarterly*, Vol. 24 No. 2, pp. 143-159.

-
- Baia, E., Ferreira, J.J. and Rodrigues, R. (2020), "Value and rareness of resources and capabilities as sources of competitive advantage and superior performance", *Knowledge Management Research and Practice*, Vol. 18 No. 3, pp. 249-262.
- Bandarian, R. (2020), "Explaining the competitive advantage in strategic research and technology management for research and technology organisations", *International Journal of Business Continuity and Risk Management*, Vol. 10 No. 1, pp. 23-46.
- Barney, J. (1991), "Firm resources and sustained competitive advantage", *Journal of Management*, Vol. 17 No. 1, pp. 99-120.
- Barney, J. (2014), *Gaining and Sustaining Competitive Advantage*, 4th ed., Pearson Education Limited, Harlow.
- Barney, J.B. (2018), "Why resource-based theory's model of profit appropriation must incorporate a stakeholder perspective", *Strategic Management Journal*, Vol. 39 No. 13, pp. 3305-3325.
- Barney, J. and Hesterly, W. (2019), *Strategic Management and Competitive Advantage: concepts and Cases*, 6th ed., Pearson, New York, NY.
- Barney, J.B. and Mackey, A. (2018), "Monopoly profits, efficiency profits, and teaching strategic management", *Academy of Management Learning and Education*, Vol. 17 No. 3, pp. 359-373.
- Barney, J.B., Ketchen, D.J., Jr and Wright, M. (2021), "Resource-based theory and the value creation framework", *Journal of Management*, Vol. 47 No. 7.
- Barrales-Molina, V., Bustinza, Ó.F. and Gutiérrez-Gutiérrez, L.J. (2013), "Explaining the causes and effects of dynamic capabilities generation: a multiple-indicator multiple-cause modelling approach", *British Journal of Management*, Vol. 24 No. 4, pp. 571-591.
- Bhattacharjee, D. and Dey, M. (2015), "Competitive profile matrix: a theoretical review", *ABAC Journal*, Vol. 35 No. 2, pp. 61-70.
- Braun, V. and Clarke, V. (2006), "Using thematic analysis in psychology", *Qualitative Research in Psychology*, Vol. 3 No. 2, pp. 77-101.
- Bygrave, W.D. and Zacharakis, A. (2011), *Entrepreneurship*, (2nd ed.), John Wiley and Sons, New York, NY.
- Čater, T. and Čater, B. (2009), "(in) tangible resources as antecedents of a company's competitive advantage and performance", *Journal of East European Management Studies*, Vol. 14 No. 2, pp. 186-209.
- Cho, M., Bonn, M.A. and Jung, H.S. (2021), "What drives restaurant competitive productivity (CP): a comprehensive examination at meso-micro levels", *International Journal of Contemporary Hospitality Management*, Vol. 33 No. 9, pp. 3065-3090.
- Clancy, B., Gardocki, B., Lerebours, G., Mathur, A., Porwal, U., Thomas, A. and Yuan, Y. (2019), *The Global Use of Medicine in 2019 and Outlook to 2023: forecasts and Areas to Watch*, IQVIA, London.
- Creswell, J.W. (2015), *Educational Research: planning, Conducting, and Evaluating Quantitative*, 5th ed., Pearson Education, New York, NY.
- David, F.R. (2011), *Strategic Management: concepts and Cases*, 13th ed., Pearson Education, NJ.
- Dutton, J.E. and Jackson, S.E. (1987), "Categorizing strategic issues: links to organizational action", *The Academy of Management Review*, Vol. 12 No. 1, pp. 76-90.
- Edvardsson, I.R., Óskarsson, G.K. and Durst, S. (2021), "The outsourcing practice among small knowledge-intensive service firms", *VINE Journal of Information and Knowledge Management Systems*, Vol. 51 No. 1, pp. 177-191.
- Eisenhardt, K.M. and Graebner, M.E. (2007), "Theory building from cases: opportunities and challenges", *Academy of Management Journal*, Vol. 50 No. 1, pp. 25-32.
- EMIS (2019), *Colombia Pharma and Healthcare Sector 2019/2020*, Emerging Markets Group Company, Hong Kong.
- Ferreira, J. and Fernandes, C. (2017), "Resources and capabilities' effects on firm performance: what are they?", *Journal of Knowledge Management*, Vol. 21 No. 5, pp. 1202-1217.

-
- Gerhart, B. and Feng, J. (2021), "The resource-based view of the firm, human resources, and human capital: progress and prospects", *Journal of Management*, Vol. 47 No. 7.
- Given, L.M.E. (2008), *The Sage Encyclopedia of Qualitative Research Methods*, 1/2, SAGE Publications, Thousand Oaks, CA.
- Gutiérrez-Martínez, I. and Duhamel, F. (2019), "Translating sustainability into competitive advantage: the case of Mexico's hospitality industry", *Corporate Governance: The International Journal of Business in Society*, Vol. 19 No. 6, pp. 1324-1343.
- Harvey, W.S., Morris, T. and Müller, M. (2017), "Reputation and identity conflict in management consulting", *Human Relations*, Vol. 70 No. 1, pp. 92-118.
- Herrmann, A.M. (2008), "Contrasting the resource-based view and competitiveness theories: how pharmaceutical firms choose to compete in Germany, Italy and the UK", *Strategic Organization*, Vol. 6 No. 4, pp. 343-374.
- Jackson, K. and Bazeley, P. (2019), *Qualitative Data Analysis with NVivo*, 3rd ed., SAGE Publications, Thousand Oaks.
- Johnson, G., Scholes, K. and Whittington, R. (2008), *Exploring Corporate Strategy: text and Cases*, Eighth ed., Pearson education, London.
- Larsen, E., Markides, C.C. and Nattermann, P.M. (2003), "New entry, strategy convergence and the erosion of industry profitability", Strategic and International Management Working Paper No. SIM 26, pp. 1-44.
- León, G., Tejero, A. and Franco-Riquelme, J.N. (2020), "New methodology for profiling and comparison of open innovation models to conduct R&D activities", *IEEE Access*, Vol. 8, pp. 48491-48502.
- Lin, C., Tsai, H.L., Wu, Y.J. and Kiang, M. (2012), "A fuzzy quantitative VRIO-based framework for evaluating organizational activities", *Management Decision*, Vol. 50 No. 8, pp. 1396-1411.
- Liu, Q., Gou, J. and Camarinha-Matos, L.M. (2020), "Towards agile operation for small teams in knowledge intensive organizations: a collaboration framework", in Camarinha-Matos, L.M. Afsarmanesh, H. and Ortiz, A. (Eds), *Boosting Collaborative Networks 4.0. PRO-VE 2020. IFIP Advances in Information and Communication Technology*, Springer, Suiza, pp. 263-272.
- Makani, J. and Marche, S. (2010), "Towards a typology of knowledge-intensive organizations: determinant factors", *Knowledge Management Research and Practice*, Vol. 8 No. 3, pp. 265-277.
- Maket, L. and Korir, M. (2017), "Resource inimitability: the strategic resource characteristic for sustainable competitiveness in universities", *European Journal of Business and Innovation Research*, Vol. 5 No. 1, pp. 67-82.
- Martin de Castro, G., Sáez, P.L., López, J.E.N. and Dorado, R.G. (2007), *Knowledge Creation Processes: theory and Empirical Evidence from Knowledge-Intensive Firms*, Palgrave Macmillan, New York, NY.
- Mathew, N., Javalgi, R.R., Dixit, A. and Gross, A. (2021), "Drivers of emerging market professional service firm success: the role of internal firm competencies and capabilities", *Management Research Review*, Vol. 44 No. 4, pp. 547-567.
- Miklian, J. and Medina Bickel, J.P. (2017), "Theorizing business and local peacebuilding through the footprints of peace' coffee project in rural Colombia", *Business and Society*, Vol. 59 No. 4, pp. 676-715.
- Murphy, R. and Seriki, O. (2021), "The impact of environmental turbulence on the strategic decision-making process in Irish quantity surveying (QS) professional service firms (PSFs)", *Construction Management and Economics*, Vol. 39 No. 9, pp. 739-758.
- Nason, R.S. and Wiklund, J. (2015), "An assessment of resource-based theorizing on firm growth and suggestions for the future", *Journal of Management*, Vol. 44 No. 1, pp. 32-60.
- National Science Board National Science Foundation [NSB/NSF] (2022), *Science and Engineering Nal Indicators 2022: The State of US science and Engineering*, National Science Foundation, Alexandria.

-
- National Science Foundation National Center for Science and Engineering Statistics [NSF/NCSES] (2008), *Industry, Technology, and the Global Marketplace*, NSF, Arlington, VA.
- Newbert, S.L. (2008), "Value, rareness, competitive advantage, and performance: a conceptual-level empirical investigation of the resource-based view of the firm", *Strategic Management Journal*, Vol. 29 No. 7, pp. 745-768.
- Organisation for Economic Co-operation and Development (OECD) (2001), *OECD Science, Technology and Industry Scoreboard 2001: Towards a Knowledge-Based Economy*, OECD Publications Service, Paris.
- Paixao Garcez, M. and Sbragia, R. (2013), "The selection of partners in technological alliances projects", *Journal of Technology Management and Innovation*, Vol. 8, pp. 49-49.
- Patton, M.Q. (2001), *Qualitative Research and Evaluation Methods*, 3rd ed., Sage Publications, Thousand Oaks.
- Peteraf, M.A. and Bergen, M.E. (2003), "Scanning dynamic competitive landscapes: a market-based and resource-based framework", *Strategic Management Journal*, Vol. 24 No. 10, pp. 1027-1041.
- Prasad, S.S. (2020), "Interpreting competitive advantage: evidence from existing literature", *Indian Journal of Marketing*, Vol. 50 No. 8-9, pp. 88-95.
- Ray, G., Barney, J. and Muhanna, W.A. (2004), "Capabilities, business processes, and competitive advantage: choosing the dependent variable in empirical tests of the resource-based view", *Strategic Management Journal*, Vol. 25 No. 1, pp. 23-37.
- Rehman, J., Hawryszkiewicz, I., Sohaib, O. and Namisango, F. (2020), "Building a knowledge-based competitive advantage in service firms: role of high-performance work systems", Paper presented at the 21st European Conference on Knowledge Management (ECKM) 2020, Reino Unido, Coventry, pp. 658-667.
- Rehman, J., Hawryszkiewicz, I., Sohaib, O. and Namisango, F. (2021), "Deriving intellectual capital Bottom-Line in professional service firms: a high performance work practices perspective", *International Journal of Knowledge Management*, Vol. 17 No. 2, pp. 104-129.
- Resolución 3028 de (2008), "Por la cual se definen las áreas técnicas de producción de los establecimientos farmacéuticos y se establecen otras disposiciones", Publicado en El Diario Oficial No. 47082 del 15 de agosto de 2008 C.F.R.
- Rockwell, S. (2019), "A resource-based framework for strategically managing identity", *Journal of Organizational Change Management*, Vol. 32 No. 1, pp. 80-102.
- Sachitra, V. and Chong, S.-C. (2018), "Resources, capabilities and competitive advantage of minor export crops farms in Sri Lanka: an empirical investigation", *Competitiveness Review: An International Business Journal*, Vol. 28 No. 5, pp. 478-502.
- Sigalas, C. and Papadakis, V.M. (2018), "Empirical investigation of relationship patterns between competitive advantage and superior performance", *Journal of Strategy and Management*, Vol. 11 No. 1, pp. 81-111.
- Sigalas, C., Economou, V. and Georgopoulos, N.B. (2013), "Developing a measure of competitive advantage", *Journal of Strategy and Management*, Vol. 6 No. 4, pp. 320-342.
- Stake, R. (2005), "Qualitative case studies", in Denzin, N.K. and Lincoln, Y.S. (Eds), *Handbook of Qualitative Research*, SAGE, Thousand Oaks, pp. 443-466.
- Victor, R. (2014), "The strategic implication of knowledge attributes: understanding the conditions in which knowledge matters to performance", *Management Decision*, Vol. 52 No. 3, pp. 505-525.
- Welch, C., Piekkari, R., Plakoyiannaki, E. and Paavilainen-Mäntymäki, E. (2011), "Theorising from case studies: towards a pluralist future for international business research", *Journal of International Business Studies*, Vol. 42 No. 5, pp. 740-762.
- Ying, Q., Hassan, H. and Ahmad, H. (2019), "The role of a manager's intangible capabilities in resource acquisition and sustainable competitive performance", *Sustainability*, Vol. 11 No. 2, pp. 1-20.

Further reading

Bowen, G.A. (2009), "Document analysis as a qualitative research method", *Qualitative Research Journal*, Vol. 9 No. 2, pp. 27-40.

Company EFC (2022), *Web Page Archive*, Document of Company EFC, Bogotá.

Company CSAS (2022), *Web Page Archive*, Document of Company CSAS, Bogotá.

Company STGF (2022), *Web Page Archive*, Document of Company STGF, Bogotá.

Corresponding author

César Augusto Bernal-Torres can be contacted at: cesar.bernal@unisabana.edu.co

For instructions on how to order reprints of this article, please visit our website:

www.emeraldgroupublishing.com/licensing/reprints.htm

Or contact us for further details: permissions@emeraldinsight.com