UNPACKING THE ORGANIZATIONAL CULTURE AS A SUSTAINABLE DISTINCTIVE COMPETENCE IN KNOWLEDGE INTENSIVE FIRMS: THE HARVESTPLUS CASE IN COLOMBIA

Merlin-Patricia GRUESO-HINESTROZA [1*], Norbey AMAYA [2],

Gustavo PERALTA-HERNÁNDEZ [3], Wolfgang PFEIFFER [4]

[1, 2]School of Management and Business, Universidad del Rosario, Bogotá, Colombia
[3]Independent consultant, Cali, Colombia
[4]Independent consultant, Washington, United States

Abstract. Knowledge-Intensive Firms are a relevant research and practice field because there is much interest in factors promoting their competitiveness. Scholarly literature has noted that organizational culture is a resource is related to the achievement of competitive advantages. Nevertheless, organizational culture at Knowledge-Intensive Firms, has been scarcely analyzed regarding how it is configured and what effects it has. To explain how organizational culture at Harvest-Plus, as a Knowledge-Intensive Firm, becomes a distinctive competency, a qualitative study case study design was developed. The results indicate that the predominant culture is adhocratic, it has evolved according to the different HarvestPlus phases and is a sustainable distinctive competence due to it is valuable, difficult to imitate and therefore unique. This research will be useful for scholars and practitioners of this type of organization to understand the usefulness of coordinating and integrating the organizational culture, to leadership behaviors, human resources practices and strategic alliances management, to create strategic resources, as HarvestPlus has done.

Keywords: Knowledge-Intensive Firm, resources-based view, organizational culture, competing values framework, VRIO framework, sustainable distinctive competence.

JEL Classification: L10, M10, M14.

Introduction

The modern business world is experiencing a wave of new organizational forms that pose a challenge to its management, such as Knowledge Intensive Firms (KIFs). KIFs are of growing importance worldwide (Liu et al., 2020), among other reasons, because it makes significant contributions to the growth of the global economy (Balthu & Clegg, 2021). According to a report by the National Science Board, National Science Foundation (2020), KIFs make contributions to the global economy with more than $ 9 billion in production, representing 11% of the World Gross Domestic Product. Although the interest of practitioners in this type of organization has increased in the last decades (Jemielniak & Kociatkiewicz, 2009), research of KIF's into Strategic Management field is still limited (Murphy & Seriki, 2021).

A KIF is different from other types of organization (Kärreman et al., 2002). KIFs are structured based on creativity and innovation (Faccin et al., 2019). Also, KIFs emphasize in work interdependence, creating internal networks that ensure the accumulation of social capital (Oparaocha, 2016) as well as participation in external networks as strategic alliances (Prange, 2009). Bouncken and Kraus (2013) claim that the pursuit of cooperation and competition has an impact on innovations in knowledge-intensive industries.

Compared to traditional organizations, KIFs have distinctive cultural traits, as a consequence of its workforce makeup and the essence of the work they do (Starbuck, 1992). Therefore, Organizational Culture (OC) is an aspect of great relevance for KIFs, becoming a fundamental requirement for their success (Mathew, 2019). However, the scholarly literature indicates that there is no clarity on the role of OC in this type of organization (Mathew, 2019).

Thus, there is a need for empirical studies and provide dynamic explanations of the emergence and effects of organizational culture (Willmott, 1993). This need is

*Corresponding author. E-mail: merlin.grueso@urosario.edu.co

particularly acute in the context of KIF (Mathew, 2019). Given that organizational culture has been considered as a strategic resource that contributes to the achievement of sustainable competitive advantages (Barney & Hesterly, 2019).

On the other hand, in the last 30 years the Resource-Based Perspective (RBV) has gained great relevance (Barney et al., 2021) as one of the main theories in the field of strategic management (Davis & DeWitt, 2021). From RBV, the Value, Rarity, Imitability and Organisation-VRIO-framework (Barney & Hesterly, 2019) allows to identify the potential of the resources, especially their distinctive competence. Although it has been extensively used in several empirical studies (Barney & Mackey, 2018), most of the research developed are characterized by maintaining a conceptual approach (Lin et al., 2012). In view of the above, some authors recommend the development of studies with the purpose of enriching, from an empirical perspective, the understanding of the resource-based perspective (Arbelo et al., 2020) and the VRIO framework (Gutiérrez-Martínez & Duhamel, 2019).

Recognizing the aforementioned gaps in previous research, the study aimed to explain how OC becomes a sustainable distinctive competence in HarvestPlus as a KIF, based on the following main and specific research questions: a) How OC becomes a sustainable distinctive competence in HarvestPlus as a KIF? b) How is the OC in HarvestPlus as a KIF? and c) How has the OC evolved in a KIF level IV?

To meet the purpose, the research paper is divided into 6 sections. Following the introduction, in Section 1, this paper presents the theoretical framework offering an overview of the existing literature. Section 2 highlights the research method. Section 3 presents the research setting. Section 4 reports the results generated by the data analysis. Section 5 presents the discussion, the last sections are conclusions and managerial and policy relevance.

1. Theoretical framework

1.1. Knowledge Intensive Firms (KIFs)

In recent decades the study of KIFs has increased by researchers specialized in issues related to organization and management (Sheehan, 2005). KIFs have been defined in terms of "the nature and quality of their highly qualified human capital, the work processes that create market value through knowledge and the deployment of knowledge that involves innovation, initiative and development of competencies in the provision of customized services" (Kinnie & Swart, 2012, p. 62). This type of organization is characterized by being creative, innovative (Faccin et al., 2019) and implementing sophisticated strategies (Skjolsvik et al., 2017).

Makani and Marche (2010) developed a KIF model, made up of 13 factors and two dimensions. The 13 factors are: worker independence, cognitive abilities, decisions impact, accountability, managerial control, body

of knowledge, nature of tasks, expertise, demand for innovation, dimensions of professional orientation, nature and size of occupational network, relations with others internal and external and leveraging effect. The two dimensions are worker oriented (expertise vs innovation) and Organization/unit oriented. From the valuations obtained in the 13 factors and the two dimensions, the Makani and March (2010) Model classifies KIFs into four levels, as shown in Figure 1. These four levels of KIFs are: level I (unit oriented – expert driven organizations), level II (unit oriented – innovation driven organizations), level III (Organizationally oriented – expert driven organizations), and level IV (Organizationally oriented – innovation driven organizations).
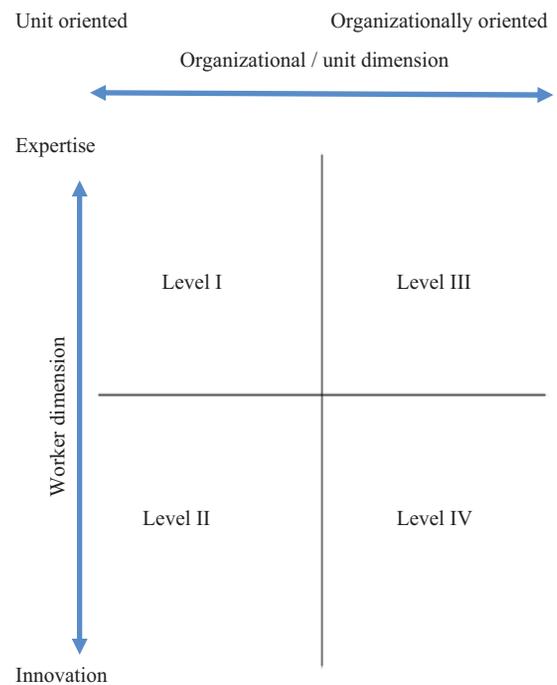

Figure 1. A typology of knowledge-intensive organizations (source: prepared with modifications from Makani & Marche, 2010, p. 272)

1.2. Organizational Culture (OC)

Since the 1980s, OC has been recognized as an important phenomenon in business management (Adisa et al., 2020). OC is constructed from basic assumptions that determine the adoption of values, expressed through visible manifestations or artifacts (Schein, 2004). Other authors point out the OC is understood through an interplay of values, beliefs, habits, myths and symbols that are expressed in organizational contexts (Oz et al., 2015).

In academic literature there are various models that deal with OC e. g., Hofstede's "Culture Approach", Quinn and Rohrbaugh's "Competitive Values Approach", Deal and Kennedy's "Organizational Culture Type", Schein's "Organizational culture Model" and Cameron and Quinn's "Competing Values Model" – CVM – (Oz et al., 2015).

The last two models are characterized by defining CO in terms of values, norms and behavior (Lobrij et al., 2020). In relation to the CVM has two dimensions, the first analyzes how the organization prioritizes between flexibility versus discretion and stability versus dynamism, and the second exposes two orientations – internal and external.

These dimensions identify four types of Culture: clan, adhocracy, hierarchy and market (Cameron & Quinn, 2011). The Clan Culture emphasizes flexibility focused on the internal orientation of the organization. Leaders in this culture tend to be considerate and facilitate participation and teamwork. Alternatively, Hierarchical Culture is internally focused and emphasizes stability through regulations and control. Leaders of this culture tend to be cautious and conservative, putting special attention to technical issues. On the other hand, Adhocratic Cultures are oriented towards the external environment, supported in a flexible organizational structure. Leaders in this culture are visionaries and entrepreneurs who are willing to take risks. Finally, Market Culture is externally oriented and reinforced by a stable structure focused on productivity and results. Leaders tend to concentrate on productivity enhancement (Cameron & Quinn, 2011). The Competing Values Model has been frequently used in empirical research (Yang et al., 2020) because it captures most of the dimensions of organizational culture (Naor et al., 2014).

1.3. VRIO Framework and organizational strengths (distinctive competence or sustainable distinctive competence)

The VRIO framework is understood as a tool to recognize the competitive potential of internal resources, specifically, their strength, which can be of two types: a) distinctive competence: valuable and rare resource and b) sustainable distinctive competence: valuable, rare, inimitable resource and organization of the firm to exploit its potential (Barney & Hesterly, 2019) (See Table 1). Thus, from the RBV perspective, distinctive competence refers to an important type of resource as means to achieve competitive advantages (Camisón, 2005; Eden & Ackermann, 2010).

Table 1. The relationship between the VRIO framework and organizational strength – distinctive competence or sustainable distinctive competence
(source: adapted from Barney, 2014, p. 140)

Valu-able?	Rare?	Costly to imitate?	Exploited by organization?	Strength or weakness
No	–	–	No	Weakness
Yes	No	–	–	Strength
Yes	Yes	No	–	Strength and distinctive competence
Yes	Yes	Yes	Yes	Strength and sustainable distinctive competence

According to Barney (2014) the VRIO framework identifies the potential of the resources, in particular their organizational strengths and their links to distinctive competence or sustainable distinctive competence.

1.4. Organizational culture as a sustainable distinctive competence in KIFs

From a RBV perspective, attributes allow you to explore the resources that companies have and their strategic implications (Duarte Alonso & O'Brien, 2017). Barney and Clark (2007) point out that OC can be thought of as an organizational strength and sustainable distinctive competence organization because it meets the following attributes: it is valuable (V): resource that is a strength for the company; rare (R): refers to the fact that the resource is rare in the industry; imperfectly imitable (I): are those resources that the other companies cannot obtain, and organization (O): exploited by the organization effectively, abbreviated as VRIO (Barney & Hesterly, 2019).

In addition, there is evidence that OC strengthens the growth of an organization (Miroshnik, 2013) and contributes to the achievement of sustainable competitive advantage (Barney & Hesterly, 2019; Cameron & Quinn, 2011). Consequently, it can be used with respect to one's competitors (Klein, 2011) in an innovative market (Oyemomi et al., 2019).

In the context of KIFs, OC is highly relevant with respect to psychosocial performance indicators. For instance, it has been shown that KIFs must appropriately manage factors such as the relationship with managers, human resources practices, structure and organizational culture to have more motivated employees (Hebda et al., 2012). There are three aspects of the culture highly relevant for a KIF employee, i.e., a culture that promotes innovation, a culture that encourages a team environment, and an organization that retains a critical mass of creative individuals (Hebda et al., 2012). In addition to the above, OC in KIFs is conceived as a social mechanism to keep employees aligned with the company's strategy (Ichijo & Nonaka, 2007), as a result of the targeting of values, ideas, beliefs, emotions and employee identification (2001), hence, most KIFs are based on a corporate ideology as a form of control. It has also been noted that KIFs "often deviate greatly from bureaucratic principles." (Alvesson, 2000, p. 1102; 2001).

In knowledge-intensive organizations there is a predominance of the adhocratic culture, which is characterized by an egalitarian, dynamic and creative environment, where workers can expose their ideas to find solutions to specific customer needs, likewise, leaders are visionaries and innovators and are also responsible for promoting a culture that allows generating new knowledge and implementing innovative products and services (Junior et al., 2021).

Relatively scant attention has been paid to OC in KIFs therefore, our aim is to understand how OC becomes a sustainable distinctive competence in HarvestPlus as a KIF.

2. Methodology

The methodological approach was qualitative research, characterized by "to capture, understand, and represent participants' perceptions and meanings through and in their own words" (Swanson & Holton, 2005, p. 234), obtain a deeper knowledge of the information (Gao & Alas, 2010) and help researchers design instruments for quantitative studies (Suharti & Sugiarto, 2020). Moreover, the research represents an intrinsic case study because it exclusively focuses on reviewing a single analysis (Stake, 2005). The unit of analysis was HarvestPlus, chosen by paradigmatic case sampling because it was one of the winners of the World Food Award for International Research (HarvestPlus, 2019). A case is "paradigmatic when it is considered the exemplar for a certain class" (Given, 2008, p. 697). The selected information gathering techniques are the semi-structured interview (Patton, 2015) and documentary analysis (Bowen, 2009), that are among the particularly common techniques for data collection in qualitative research (Charmaz & Keller, 2016), particularly in case study research designs (Stake, 1995).

In this study, it was decided to interview to the Global Director of Product Development and Commercialization (GDPDC) of the organization because of his degree of involvement in the strategic process (Rotundo & Hernández, 2014) and its ability to significantly impact the performance of the organization (Barney & Arikan, 2001). It has been pointed out that the vision of the company's director plays a fundamental role in the allocation, acquisition and management of resources (Garbuio et al., 2011), their behavior also has a direct influence on the company's strategic actions (Hsu & Chang, 2021). In this sense, the interviewee in this research is the Deputy Director, who has held a variety of positions in the organization, consequently, he can be considered an "elite" participant, a term that refers to those people with a certain position or status within the organization (Liu, 2018). It should be noted that this type of "elite interview" has been used in previous studies to explore certain topics in more depth, in particular (Lilleker, 2003).

In this study, a guide of questions was developed based mainly on Makani and Marche's typology of knowledge-intensive organizations and Organizational Culture based on the Cameron and Quinn's "Competing Values Model" (2011) (see Appendix I). Data were obtained from: 1) the audio record of an interview with the Global Director of Product Development and Commercialization (GDPDC) of HarvestPlus (83 minutes in total), 2) the audio transcription of the interview, and 3) the organization's own documents that were acquired during the fieldwork of this study, i.e., internal archives (intranet and internal reports) and external archives (published articles, web sites and management reports from 2011 to 2018). Ciechanowski et al. (2020) claim that the resources of online data are becoming more useful for qualitative researchers. A triangulation between types of data (Creswell, 2105) (primary information collected from the elite interviewee and secondary information obtained through document review) and the manner of data collection (semi-structured interviews and document review) was carried out in order to increase the reliability of the evidence (Stake, 2010).

Regarding data analysis strategy, we used a guide to review company reports (Amaya et al., 2021) and the thematic analysis, which enabled us to "identify, analyze, and report patterns (themes) within data" (Braun & Clarke, 2006, p. 79). In reference to the definition of a topic, DeSantis and Ugarriza (2000) claim that is "an abstract entity that brings meaning and identity to a recurrent experience and its variant manifestations" (p. 362).

To identify the most relevant themes and patterns we use Nvivo Plus 12 software (Jackson & Bazeley, 2019). Thus, a deductive creation of codes was used to process information coding. This method implies defining the name of codes based on the theory's suggestion, without preventing the emergence of additional content (Arbeláez & Onrubia, 2014). During the process, the following themes were established that guided the analysis, 1) typology of a knowledge-intensive firm, 2) competing values model and 3) VRIO framework – Strength (distinctive competence and sustainable distinctive competence).

Finally, after the researchers discussed the findings with the key participant (GDPDC), the feedback was considered reflective and modified, when necessary. In this study, the criteria for the research of qualitative studies (COREQ) were incorporated, which guaranteed the transparency, rigor, and completeness of the researchers (Miklian & Medina Bickel, 2017) (see Appendix II).

3. Research setting: HarvestPlus biofortification challenge program

The HarvestPlus Biofortification Challenge Program is an international, nonprofit program whose purpose is to diminish micronutrient malnutrition, the so-called hidden hunger (HarvestPlus, 2015). It assists public health, through the development and dissemination of biofortified crops for improved levels of nutrition, with enrichment in vitamins and minerals, as well as food products derived from these crops (HarvestPlus, 2016).

HarvestPlus is part of the Consultative Group on International Agricultural Research (CGIAR), an international association promoting agricultural research for food supply security. CGIAR research takes place in 15 international centers, in collaboration with hundreds of partner organizations. As a program, HarvestPlus is coordinated by two of these centers, the International Center for Tropical Agriculture with headquarters in Cali, Colombia and the International Food Policy Research Institute (IFPRI) with headquarters in Washington, D.C. (HarvestPlus, 2012). As of mid-2019, IFPRI is now the single governing Center of Harvest Plus Program.

The program is managed by a Chief Executive Officer (CEO), who is in charge of facilitating (search for resources), monitoring (follow-up using key impact indicators) and exchanging information (dissemination) to

all stakeholders and the participating institutions, using a multidisciplinary perspective and a project management approach. The staff is composed by highly skilled individuals with interdisciplinary approach.

The HarvestPlus Program officially commenced in 2003 and over seventeen years has spent more than $400 million to undertake the activities. It have been possible with the sustained and major funding from the Bill and Melinda Gates Foundation (BMGF), the UK's Department for International Development (DFID, now the Commonwealth & Development Office FCDO), The Canadian International Development Agency (CIDA, now Gobal Affairs Canada GAC), the United States Agency for International Development (USAID), and the CGIAR's program of Investigation in Agriculture for Nutrition and Health (A4NH) (HarvestPlus, 2015).

As HarvestPlus does not have a research infrastructure of its own. Its sponsored research is carried out by public and private sector partners. These include research institutes, universities, private sector organizations and other organizations from all over the world which worked in biofortification (HarvestPlus, 2004). The collaboration between this scientific program and its partners includes the generation of relevant scientific publications, including: books, articles in scientific journals, chapters in books and other texts (HarvestPlus, 2004). The development of the program also has required the establishment of alliances with other industries and the media (including film and music), with the objective to achieve the programs' commercial goals (Centro Internacional de Agricultura Tropical [CIAT], 2015).

The HarvestPlus Program was structured in three phases (HarvestPlus, 2012). HPlus I (Discovery), 2003–2008, identified the target populations and consumption of basic food products, setting nutrient target levels, germplasm screening and determining breeding feasibility with the development of crop product concepts. HPlus II (Development), 2009–2013, concentrated on crop product development and performance testing in target countries. Parallel studies were done on nutrient retention, bioavailability and nutritional efficiency in human subjects. HPlus III (Delivery), 2014–2018, with products now available, activities focused on commercialization and marketing with awareness and demand creation to develop sustainable markets for seed and products (see Figure 2).

With a novel trait, you can perceive HPlus-I a startup – key was building a knowledge base – in HPlus-II focus was product development and generating nutrition evidence that biofortification works. HPlus-III again challenges marketing a new product with absence of profitable markets which have to be developed. Critical partnerships move from R&D – upstream to downstream e.g., seed production and marketing.

3.1. HarvestPlus as a Knowledge Intensive Firm

According to the proposed model by Makani and Marche (2010), HarvestPlus can be considered a level IV KIF. The
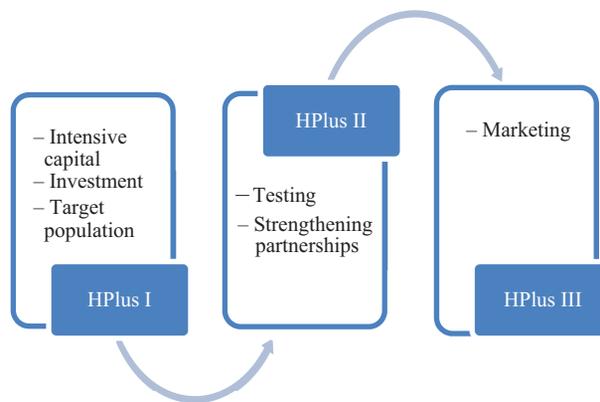

Figure 2. Phases of development in the HarvestPlus program (source: prepared with modifications from HarvestPlus, 2012, p. 3)

classification model of KIFs identifies particular characteristics related to the work that is done there, the experience of the workers, the internal and external relations that are established and the level of control kept by the managers (see Table 2).

Table 2. HarvestPlus and KIF level IV (source: adapted from Makani & Marche, 2010, p. 274)

Characteristics	Theoretical level IV	HarvestPlus level IV
Worker independence	High	Yes
Cognitive skills	High	Yes
Decision impact	High	Yes
Accountability	High	Yes
Managerial control	Limited	Yes
Body of Knowledge	High	Yes
Nature of Task	Complex, unique, and dynamic	Yes
Expertise	High	Yes
Demand for innovation	High	Yes
Dimensions of professional orientation	Mostly professionals and accredited workers	Yes
Nature and size of occupational network	Large, complex	Yes
Relationship to others, internal and external	Strong social ties and shared values	Yes
Leveraging effect	Knowledge is both an input and output product, that is, esoteric, innovative knowledge	Yes

In relation to the nature of the work, the organization develops complex and unique activities. According to the GDPDC of the program:

"In HarvestPlus we work to reduce the hidden deficiency of micronutrients that affect more than 2000 million people in the world, creating crops that contain more vitamins, iron and zinc, without representing higher costs to farmers (GDPDC interview, reference 2)".

Knowledge is critical for organizations classified as Level IV KIF. HarvestPlus uses and produces a high volume of knowledge because of the products that they develop in response to the specific needs of more than 2 billion people in the world (HarvestPlus, 2014a). This knowledge is then shared and distributed to universities, research centers and groups as well as strategic alliances in the specialized public, private sector, NGO's, etc. Regarding the abilities of the people involved with HarvestPlus, we observed that they are highly qualified, use their intellectual abilities and tend to be innovative. Makani and Marche (2012) point out that for a level IV organization, intellectual capacity is relevant in producing and selling knowledge.

4. Results

This section presents the results obtained from the case study. Initially, the specific questions of the study are solved and, finally, the main research question is answered.

4.1. Organizational culture and its evolution

To analyze the predominant organizational culture in HarvestPlus in the different phases (HPI, II y III), Cameron and Quinn's (2011) model was used. This model has two dimensions: the first analyzes how the organization prioritizes between flexibility versus discretion and stability versus dynamism and the second dimension exposes two orientations – internal and external. These dimensions, fall into four types of culture: clan, adhocracy, hierarchy and market. The research results show that the organizational culture at Harvest Plus has evolved from a clan culture (at the beginning) to an adhocracy culture (at present). We observed that, initially, in phase HPlus I (2003–2008) a clan culture developed, with significant unity, a moderate inclination towards adhocracy, with low levels in the hierarchy quadrant and no registry in the marketing quadrant (see Figure 3).

In HPlus II phase (2009–2013), the program was characterized by having a greater emphasis in the adhocratic and marketing quadrants with low levels in the clan and hierarchy quadrants (see Figure 4).
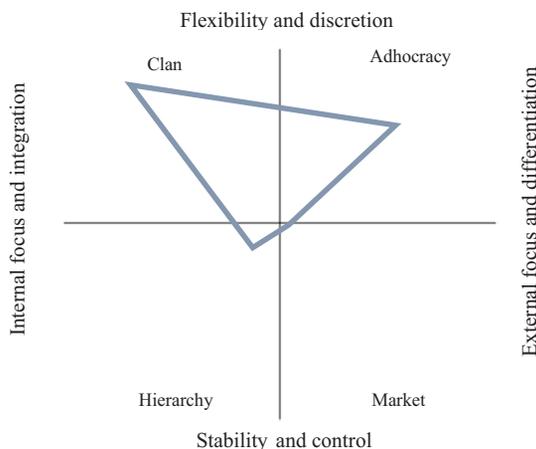

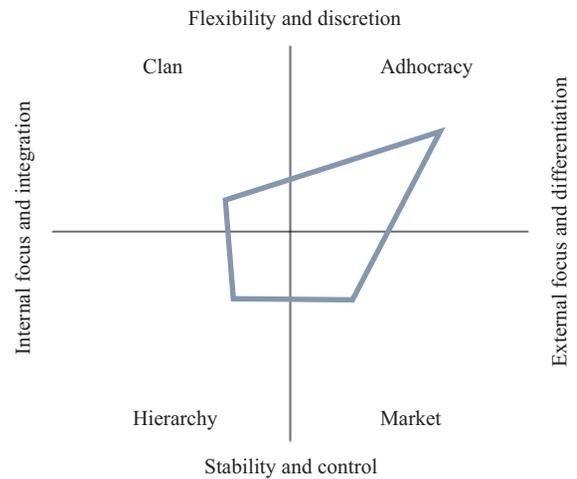Figure 3. Profile of organizational culture of HPlus I

Figure 4. Profile of organizational culture of HPlus II

Currently, HarvestPlus finds itself in phase III and the predominant culture is still adhocratic. There is a tendency towards market type organizational culture (see Figure 5).
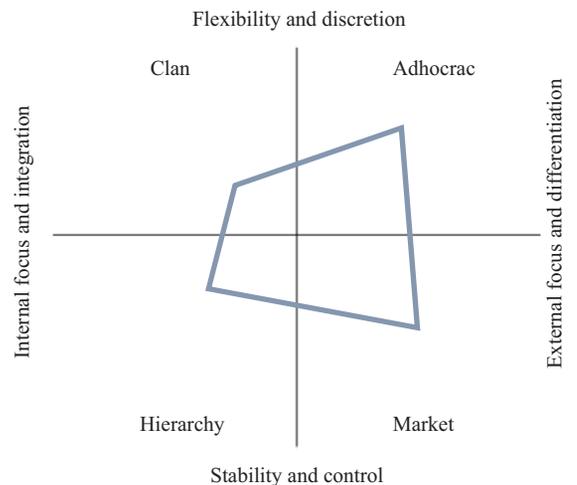

Figure 5. Profile of organizational culture of HPlus

Regarding the dominant characteristics (see Figure 6), HarvestPlus is a dynamic place to work, with a creative environment. It generates impact through a revolution in the field of health at an international level "seeding a better life, bridging deltas, taking risks and using creative disruption to make an impact. Sounds like a revolution to us." (HarvestPlus, 2014, p. 2). In addition, as expressed by the GDPDC of HarvestPlus.

"It's like something new, like a revolution in thought, learning through taking risks, yes, this is important" (GDPDC interview, reference 1).

Regarding leadership, HarvestPlus encourages people to take risks. The way in which the program has focused sequentially on product development, followed by testing and marketing, to reduce hidden hunger in the world is revolutionary and is an endeavor that requires new ways of seeing and doing things.
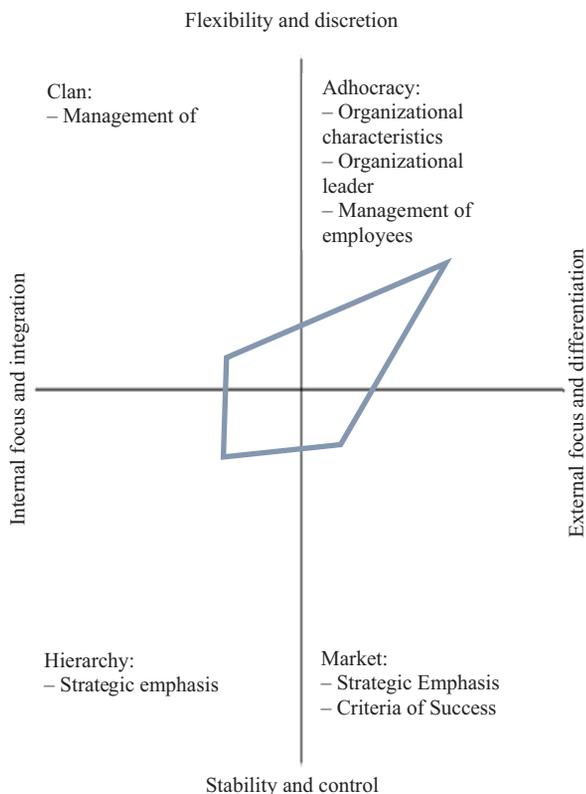
Figure 6. HarvestPlus organizational culture profile (source: prepared with modifications from Cameron and Quinn's model (2011)

With respect to the relationship between employees and partners, HarvestPlus gives quite a bit of autonomy to its workers, involving them in the process, with the purpose of creating a work climate of responsibility with flexibility and also achieving the results that they have set for themselves.

As far as personnel management is concerned, some features of the clan type culture are evident. Equality and participation are promoted between employees. Just as is the initiative to take on different roles depending on the needs of each Project. For example, with respect to equality, the GDPDC of HarvestPlus commented:

"You have to treat everyone equally. I treat a field-worker, a scientist or a board chair the same" (GDPDC interview, reference 1).

Regarding partner collaborations, what stands out most is that to fulfill the goals of the program, they have learned how to develop a collaborative project within different scientific fields (nutritionists, biologists, agronomists, marketing specialists, economists). Nevertheless, individual initiative and freedom of thought are encouraged as the GDPDC of HarvestPlus pointed out:

"Everybody knows what to do, knows their position, how to contribute and recognize what is important for the program" (GDPDC interview, reference 1).

Organizational unity is maintained by experimentation with new products and innovation, expressed through goals in projects. Given that, HarvestPlus finds

itself with direction "every indicator suggests that trajectory is a steep one. Embracing the pace implied by that kind of growth clearly represents a challenge - but we appear to have built a team ready to meet it" (HarvestPlus, 2014b, p. 2). The values are "show don't tell; take risks & learn; creative disruption" (HarvestPlus, 2014b, p. 2).

About strategic emphasis, adhocratic culture predominates, and HarvestPlus is constantly growing with new resources acquisitions, including financial ones. However, an attribute of market type culture appears because the program is oriented around the fulfillment of goals. The GDPDC of HarvestPlus states:

"These are my annual objectives and for my team, for example this year I have to get biofortified food to two million people" (GDPDC interview, reference 2).

In relation to measures of success, culture at HarvestPlus is predominantly adhocratic. In this organization kind, success depends on the development of innovative products. Given that "HarvestPlus is a leader in the global effort to end hidden hunger caused by the lack of essential vitamins and minerals in the diet such as vitamin A, zinc, and iron" (HarvestPlus, 2015, p. 18). However, some market type features show up when considering that for HarvestPlus, results are important – growth of coverage, participation and market positioning. For example, with respect to the market, James Akananiyundi an agrodealer commented "HarvestPlus also helped me market my products in a way that farmers adopt the culture of buying seed. I see that through our partnership with HarvestPlus all farmers will grow and eat iron beans as we engage to reach as many farmers as possible" (HarvestPlus, 2013, p. 11).

4.2. Organizational culture as a sustainable distinctive competence

Our results revealed that OC is a sustainable distinctive competence for HarvestPlus, given that this resource is a strength for the analyzed organization, it is difficult to obtain and copy by the competition and it is used in an efficient way (see Table 3).

Table 3. Culture organizational relationship with organizational strengths and sustainable distinctive competence (source: adapted from Barney, 2014, p. 140).

Re-source	Attributes				Strength or weakness
	Value	Rare	Imper-fectly imitable	Organizational – Exploited by the organization effectively	
Organizational culture	14 quotes in 6 documents	11 quotes in 3 documents	3 quotes in 1 document	4 quotes in 2 documents	Organizational strength and sustainable distinctive competence
	Yes	Yes	Yes	Yes	

Table 3 shows that OC quotes (interview and organization's own documents) are mainly linked to the attribute value – 14 quotes in six documents. Next, we find the rare attribute – 11 quotes in three documents. Subsequently, the organizational attribute (exploited by the organization effectively) – four quotes in two documents are displayed. Finally, there is the inimitable attribute – three quotes in one document.

Regarding the value attribute, Barney and Clark (2007) point out that a valuable OC motivates workers to make additional efforts to meet the needs of customers. In the case of HarvestPlus, one of the relevant aspects in its marketing strategy is the commitment with the consumer. By example, *"Zambia has been working successfully with health workers in community clinics, to educate mothers about the benefits of corn with provitamin A, for them and their children"* (HarvestPlus, 2021, par. 11). Therefore, HarvestPlus has a culture that values customer proximity and satisfaction. Another example is when companies that achieve organizational goals through their workers are characterized by having an OC that supports and appreciates the employee (Barney & Clark, 2007). According to the GDPDC:

"Success also depends on the product, that you have a competitive product. Of course, this was also for all the colleagues, that's why we are working very hard, I think that, for them, many times it was going the extra mile" (GDPDC interview, reference 1).

Regarding the rare attribute, unique experiences, such as the characteristics that distinguish its founders, influence the construction of a culture that is not common among its competitors (Barney & Clark, 2007). For example, when asked about Howdy Bouis, founder of the program, some workers remembered his words when he received the world food award: "He talked about how we were the ones who did it, not him. His first reaction when he won was to say, Oh God, they really should have given it to the person who is the head of our crop breeding. That was his first reaction. So that was something really unusual and it has really affected our corporate culture" (HarvestPlus, 2017, par. 7). Howdy is often recognized as the "*champion of biofortification and thought leader*" (HarvestPlus, 2020, p. 15).

A company with a rare and valuable OC that emerged during the founding process, including the influence of the leader, can create an insurmountable barrier to imitation (Barney, 1991). HarvestPlus and its promoter Howdy exemplify this situation, for the program in the early stages *"Getting funding was very difficult. (…) I think that if Joseph Hunt had not attended that conference, we would not be here today"* (HarvestPlus, 2019, par. 14). Howdy's skills were instrumental in convincing donors to invest in the program. HarvestPlus currently has an extensive list of donors from most continents.

Regarding the attribute organization (exploited by the organization effectively), Barney (1986) argues that one way to improve the performance of a company is to promote an OC focused on quality relationships with its employees. HarvestPlus is distinguished by establishing more standardized feedback mechanisms. As per a company worker, who stated "I have found a lot of value in the fact that managers at all levels at the top of the organization in several different countries and even in our consultants who help us with things we do not know, they are always ready to provide sincere and honest comments" (HarvestPlus, 2017, par. 10).

In relation to the analysis of the VRIO framework of HarvestPlus, in Table 3 it is found that OC is an organizational strength and a sustainable distinctive competence. In other words, this asset will allow the company to implement strategies that neutralize environmental threats or exploit market opportunities (Barney, 2014).

5. Discussion

Solving global problems such as hidden hunger requires innovative approaches such as those developed by KIF's. As innovative organization, KIFs are distinguished by creativity (Faccin et al., 2019), creation on of social capital (Oparaocha, 2016) and strategic alliances (Prange, 2009), which requires the consolidation of an organizational culture aligned with these attributes. However, the scholarly literature indicates that there is no clarity on the role of OC in this type of organization (Mathew, 2019) therefore we decided to carry out the present research.

The results indicate that the organizational culture at HarvestPlus, as a knowledge-intensive organization, has evolved from a clan culture to an adhocratic culture. According to Cameron and Quinn (2011), a clan culture is characterized by a focus on cohesion and team building, the creation of long-term relationships and alliances, and empowerment. At HarvestPlus, this cultural configuration was appropriate at the beginning of the program, as it needed to create alliances to operate and obtain resources, as well as to generate knowledge on the subject, in association with the different groups and research institutes with which it works. But as the program was consolidated over time, the OC migrated towards an adhocracy, which according to Cameron and Quinn (2011), is characterized by a focus on change and risk, giving freedom to think and act, promoting experimentation and dealing with uncertainty.

On the other hand, our findings also indicate that the HarvestPlus OC is a strategic resource that can be classified as a sustainable distinctive competence because it meets the VRIO attributes (Barney & Hesterly, 2019): valuable (V), rare (R), imperfectly imitable (I) and organization exploited (O). The HarvestPlus OC is valuable (V) because one of the strength of the company is the workers commitment to the consumers as Barney and Clark (2007) point out. Also, the HarvestPlus OC is rare (R) to the extent that its managers influence the construction of a culture that is not common among its competitors (Barney & Clark, 2007). At HarvestPlus, its founders have

strived to create an organizational culture focused on being the best around a shared purpose: to reduce hidden hunger. In addition to the above, the organizational culture at HarvestPlus is characterized by being imperfectly imitable (I). According to Barney (1991), a company with a rare and valuable OC can create a barrier to imitation (Barney, 1991). Given the vision of the program, the organization of resources and the creation of alliances in innovative ways, it is difficult for organizations dedicated to the same object to achieve a similar organizational culture. Finally, regarding the attribute organization (O), Barney (1986) argues that one way to improve the company's performance is to create an OC focused on quality relationships with its employees which at HarvestPlus has materialized through proper communication and trust.

All of the above indicates that organizational culture at HarvestPlus can be seen as a factor that has been evolving in alignment with the different program and be considered as a sustainable competitive competence (Barney & Hesterly, 2019).

Conclusions

There is no doubt that KIFs present a challenge for organizational research and practice just because they are an important source of wealth at an international level and in developed and emerging economies. KIFs have some particular features that make them ideal for study, as exemplified by an organizationally oriented and innovation driven entity like the HarvestPlus Program.

The results obtained in this study contribute and enrich the literature about KIF's and their organizational culture. It highlights themes and relationships that have not been studied much and also suggests hypothesizes for future research.

Through this research, we contribute to the generation of new knowledge on the dynamics of organizational culture, its valuation as a strategic resource and its contribution to the achievement of sustainable distinctive competences in KIF's. The study allowed us to understand how organizational culture contributes to the consolidation of fundamental conditions of KIF's, such as the interdependent work, the creation of internal networks and the creation of social capital and strategic alliances

Finally, the study highlights the RBV practical value of the VRIO framework as tools for identifying strategic resources in organizations. The application of such framework allowed recognizing HarvestPlus' culture as a fundamental resource in the generation of sustainable distinctive competences, due to the fact that it complies with the four attributes established by Barney (2014), as follows. a) value: HarvestPlus collaborators consider culture as an organizational strength, b) rare and inimitable: the culture was influenced by the founders of the program, experienced several changes in the different phases of HarvestPlus and developed over a long period of time, reasons for which it is an intangible asset difficult to obtain and

copy, and c) organization: the feedback mechanisms established between the program and collaborators favor quality relationships, which helped foster culture in an efficient manner.

Managerial relevance and policy implications

The case study of the HarvestPlus Program identified highly relevant topics related to KIFs. The set-up of an organizational culture is important to the outcomes that an organization desires. A culture based on values such as creativity, risk taking, group unity and trust, constitutes a strategic aspect for KIFs and a sustainable distinctive competence. The HarvestPlus Program culture emphasizes how to do and be better every day, competing against themselves. One of the lessons learned in this research is that in HarvestPlus they do not compete against other organizations or with an ideal organization profile and they do not improve to win because they are interested in being better always. Likewise, it is observed that their results are outstanding because they are highly competitive. But creating this type of culture is not an easy task because it requires a shared vision, common motivations and a particular management style. A cultural set up with these characteristics creates an appropriate employee environment to interact and think of creative solutions to complex problems.

On the other hand, KIFs require a flexible organizational structure. HarvestPlus Program had a project based structure with multidisciplinary approach. When from the beginning, these organizations understand the importance of environment, they adapt easily, manage their internal resources and better explore and exploit their environmental conditions. In this structure, leaders play three fundamental roles to achieve results: facilitation (provision of resources), monitoring (progress in each process) and information exchange (sufficient and timely in all directions).

The results obtained in the research suggest that Human Resources Management should be redesigned. For example, this kind of organization should reconsider sharing its human resources with strategic partners. Additionally, keeping employees at KIFs means more than an attractive salary package. They must also have challenging work, have the necessary resources for their work, an innovative environment and opportunities for professional development and growth. This means that HarvestPlus team members guided by organizational values build day to day the organization they want to achieve.

The creation of culture at HarvestPlus is a consequence of having clear organizational values as well as well-defined objectives and committed managers who lead by example therefore equally important are the recruitment practices at KIFs. These practices should be oriented towards hiring the right people with the right values and motivations, willing to play different roles depending on the stage of the project. In this context, the use of diverse

mechanisms to take advantage of worker potential is a challenge.

In HarvestPlus Program they invest in planning and then execute with agility and precision and are not afraid to abandon a practice that was successful to take on a new practice with better potential.

The study has limitations. For example, being a single case study, it does not allow generalizations. Likewise, new studies should be conducted using multiple case studies. Another limitation of the study is that it only includes the voice of the program director. Therefore, new studies should incorporate the views of employees, users and funders of programs of this type. We also believe that future studies could incorporate other models or approaches to study the relationship between firms' strategic resources and the achievement of competitive advantages. Likewise, new indicators of competitiveness could be incorporated.

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Author contributions

MPG: conceptualization, methodology, formal analysis, investigation, writing – Original draft, supervision, project administration. NA: conceptualization, methodology, formal analysis, investigation, writing – Original draft. GPH: writing – Original draft, writing – Review & editing. WP: resources, writing original draft.

Disclosure statement

The authors declare that they have no competing interests.

References

Adisa, T. A., Oruh, E. S., & Akanji, B. (2020). A critical discourse analysis of the link between professional culture and organisational culture. *Employee Relations: The International Journal, 42*(3), 698–716. https://doi.org/10.1108/ER-08-2019-0344

Alvesson, M. (2000). Social identity and the problem of loyalty in knowledge intensive companies. *Journal of Management Studies, 37*(8), 1101–1123. https://doi.org/10.1111/1467-6486.00218

Alvesson, M. (2001). Knowledge work: Ambiguity image and identity. *Human Relations, 54*(7), 863–886. https://doi.org/10.1177/0018726701547004

Amaya, N., López-Santamaría, M., Acosta, Y. A. C., & Grueso-Hinestroza, M. P. (2021). A step-by-step method to classify corporate sustainability practices based on the signaling theory. *MethodsX, 8,* 1–12. https://doi.org/10.1016/j.mex.2021.101538

Arbeláez, M., & Onrubia, J. (2014). Análisis bibliométrico y de contenido. Dos metodologías complementarias para el análisis de la revista colombiana educación y cultura. *Revista de Investigaciones, 14*(23), 14–31. https://doi.org/10.22383/ri.v14i1.5

Arbelo, A., Arbelo-Pérez, M., & Pérez-Gómez, P. (2020). Profit efficiency as a measure of performance and frontier models: A resource-based view. *BRQ Business Research Quarterly, 24*(2), 143–159. https://doi.org/10.1177/2340944420924336

Balthu, K. C., & Clegg, B. (2021). Improving professional service operations: Action research in a law firm. *International Journal of Operations & Production Management, 41*(6), 805–829. https://doi.org/10.1108/IJOPM-10-2020-0696

Barney, J. (1986). Organizational culture: Can it be a source of sustained competitive advantage? *Academy Of Management Review, 11*(3), 656–665. https://doi.org/10.2307/258317

Barney, J. (1991). Firm resources and sustained competitive advantage. *Journal of Management, 17*(1), 99–120. https://doi.org/10.1177/014920639101700108

Barney, J. (2014). *Gaining and sustaining competitive advantage* (4th ed.). Pearson Education Limited.

Barney, J., & Arikan, A. (2001). The resource-based view: Origins and implications. In M. Hitt, R. Freeman, & J. Harrison (Eds.), *The Blackwell handbook of strategic management* (pp. 124–188). Blackwell.

Barney, J., & Clark, D. N. (2007). *Resource-based theory: Creating and sustaining competitive advantage*. Oxford University Press.

Barney, J., & Hesterly, W. (2019). *Strategic management and competitive advantage: Concepts and cases* (6th ed.). Pearson.

Barney, J., & Mackey, A. (2018). Monopoly profits, efficiency profits, and teaching strategic management. *Academy of Management Learning & Education, 17*(3), 359–373. https://doi.org/10.5465/amle.2017.0171

Barney, J. B., Ketchen, D. J., & Wright, M. (2021). Resource-based theory and the value creation framework. *Journal of Management, 47*(7), 1936–1955. https://doi.org/10.1177/01492063211021655

Bouncken, R. B., & Kraus, S. (2013). Innovation in knowledge-intensive industries: The double-edged sword of coopetition. *Journal of Business Research, 66*(10), 2060–2070. https://doi.org/10.1016/j.jbusres.2013.02.032

Bowen, G. A. (2009). Document analysis as a qualitative research method. *Qualitative Research Journal, 9*(2), 27–40. https://doi.org/10.3316/QRJ0902027

Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology, 3*(2), 77–101. https://doi.org/10.1191/1478088706qp063oa

Cameron, K. S., & Quinn, R. E. (2011). *Diagnosing and changing organizational culture. Based on the competing values framework* (3rd ed.). Jossey-Bass.

Camisón, C. (2005). On how to measure managerial and organizational capabilities: Multi-item models for measuring distinctive competences. *Management Research, 3*(1), 27–48. https://doi.org/10.1108/15365430580001312

Charmaz, K., & Keller, R. (2016). A personal journey with grounded theory methodology. Kathy Charmaz in conversation with Reiner Keller. *Forum Qualitative Sozialforschung/ Forum: Qualitative Social Research, 17*(1), 1–27.

Centro Internacional de Agricultura Tropical. (2015). *Informe anual 2014–2015: caminos para lograr impacto en el desarrollo, International Center for Tropical Agriculture (CIAT)*. Cali, Colombia.

Ciechanowski, L., Jemielniak, D., & Gloor, P. A. (2020). Tutorial: AI research without coding: The art of fighting without fighting: Data science for qualitative researchers. *Journal of Business Research, 117*, 322–330. https://doi.org/10.1016/j.jbusres.2020.06.012

Creswell, J. W. (2015). *Educational research: Planning, conducting, and evaluating quantitative* (5th ed.). Pearson Education, Inc.

Davis, G. F., & DeWitt, T. (2021). Organization theory and the resource-based view of the firm: The great divide. *Journal of Management, 47*(7). https://doi.org/10.1177/0149206320982650

DeSantis, L., & Ugarriza, D. N. (2000). The concept of theme as used in qualitative nursing research. *Western Journal of Nursing Research, 22*(3), 351–372. https://doi.org/10.1177/019394590002200308

Duarte Alonso, A., & O'Brien, S. (2017). Family firms' management decision to export/not to export: A resource-based view. *Journal of Advances in Management Research, 14*(3), 270–287. https://doi.org/10.1108/JAMR-06-2016-0053

Eden, C., & Ackermann, F. (2010). Competences, distinctive competences, and core competences. In R. Sanchez, A. Heene, & T. Ede Zimmermann (Eds.), *A focussed issue on identifying, building, and linking competences* (Vol. 5, pp. 3–33). Emerald Group Publishing Limited. https://doi.org/10.1108/S1744-2117(2010)0000005004

Faccin, K., Balestrin, A., Volkmer Martins, B., & Bitencourt, C. C. (2019). Knowledge-based dynamic capabilities: A joint R&D project in the French semiconductor industry. *Journal of Knowledge Management, 23*(3), 439–465. https://doi.org/10.1108/JKM-04-2018-0233

Gao, J., & Alas, R. (2010). Human resource crises in Chinese enterprises. *Business: Theory and Practice, 11*(4), 335–344. https://doi.org/10.3846/btp.2010.36

Garbuio, M., King, A. W., & Lovallo, D. (2011). Looking inside: Psychological influences on structuring a firm's portfolio of resources. *Journal of Management, 37*(5), 1444–1463. https://doi.org/10.1177/0149206310391909

Given, L. E. (2008). *The Sage encyclopedia of qualitative research methods* (Vol. 1, 2). Sage Publications, Inc. https://doi.org/10.4135/9781412963909

Gutiérrez-Martínez, I., & Duhamel, F. (2019). Translating sustainability into competitive advantage: The case of Mexico's hospitality industry. *Corporate Governance, 19*(6), 1324–1343. https://doi.org/10.1108/CG-01-2019-0031

HarvestPlus. (2004). *About us*. http://www.harvestplus.org

HarvestPlus. (2012). *Breaking ground: 2011 annual report*. International Food Policy Research Institute (IFPRI).

HarvestPlus. (2013). *Bridging the delta: 2012 annual report*. International Food Policy Research Institute (IFPRI).

HarvestPlus. (2014a). *Diving into delivery: 2013 annual report*. International Food Policy Research Institute (IFPRI).

HarvestPlus. (2014b). HarvestPlus brandbook, Version 2.1. HarvestPlus internal document.

HarvestPlus. (2015). *Going global: 2014 annual report*. International Food Policy Research Institute (IFPRI).

HarvestPlus. (2016). *Reaching millions: 2015 annual report*. International Food Policy Research Institute (IFPRI).

HarvestPlus. (2017). *The business of giving visits the offices of HarvestPlus*. https://www.harvestplus.org/knowledge-market/in-the-news/business-giving-visits-offices-harvestplus

HarvestPlus. (2019). *A conversation with Howdy Bouis, HarvestPlus founder and world food prize laureate*. https://www.harvestplus.org/about/history/

HarvestPlus. (2020). *Getting biofortified food on everyone's plate: 2019 Annual report*. International Food Policy Research Institute (IFPRI).

HarvestPlus. (2021). *The HarvestPlus Marketing Strategy*. https://www.harvestplus.org/about-us/marketing#:~:text=The%20HarvestPlus%20Marketing%20Strategy,scale%20aware-ness%20of%20biofortified%20crops

Hebda, J. M., Vojak, B. A., Griffin, A., & Price, R. L. (2012). Motivating and demotivating technical visionaries in large corporations: A comparison of perspectives. *R&D Management, 42*(2), 101–119. https://doi.org/10.1111/j.1467-9310.2011.00669.x

Hsu, Y.-T., & Chang, K.-C. (2021). A study on top managers from a resource-based perspective. *Measuring Business Excellence, 25*(1), 58–77. https://doi.org/10.1108/MBE-02-2020-0038

Ichijo, K., & Nonaka, I. (2007). Introduction: Knowledge as competitive advantage in the age of increasing globalization. In K. Ichijo & I. Nonaka (Eds.), *Knowledge creation and management: New challenges for managers.* Oxford University Press.

Jackson, K., & Bazeley, P. (2019). *Qualitative data analysis with NVivo* (3rd ed.). Sage Publications Inc.

Jemielniak, D., & Kociatkiewicz, J. (2009). Foreword. In D. Jemielniak & J. Kociatkiewicz (Eds.), *Handbook of research on knowledge-intensive organizations*. IIGI Global. https://doi.org/10.4018/978-1-60566-176-6

Junior, J. T., Gomes, G., De Montreuil Carmona, L. J., & Tambosi, S. S. V. (2021). Organisational culture and work-life balance as facilitators of service innovation: Study in a technology knowledge-intensive business services firm. *International Journal of Innovation Management, 25*(07), 1–23. https://doi.org/10.1142/S1363919621300026

Kärreman, D., Sveningsson, S., & Alvesson, M. (2002). The return of the machine bureaucracy? Management control in the work settings of professionals. *International Studies of Management & Organization, 32*(2), 70–92. https://doi.org/10.1080/00208825.2002.11043661

Kinnie, N., & Swart, J. (2012). Committed to whom? Professional knowledge worker commitment in cross-boundary organisations. *Human Resource Management Journal, 22*(1), 21–38. https://doi.org/10.1111/j.1748-8583.2011.00172.x

Klein, A. (2011). Corporate culture: Its value as a resource for competitive advantage. *Journal of Business Strategy, 32*(2), 21–28. https://doi.org/10.1108/02756661111109743

Lilleker, D. G. (2003). Interviewing the political elite: Navigating a potential minefield. *Politics, 23*(3), 207–214. https://doi.org/10.1111/1467-9256.00198

Lin, C., Tsai, H. L., Wu, Y. J., & Kiang, M. (2012). A fuzzy quantitative VRIO-based framework for evaluating organizational activities. *Management Decision, 50*(8), 1396–1411. https://doi.org/10.1108/00251741211261999

Liu, Q., Gou, J., & Camarinha-Matos, L. M. (2020). Towards agile operation for small teams in knowledge intensive organizations: A collaboration framework. In L. M. Camarinha-Matos, H. Afsarmanesh, & A. Ortiz (Eds.), *Boosting collaborative networks 4.0. PRO-VE 2020. IFIP advances in information and communication technology* (Vol. 598, pp. 263–272). Springer. https://doi.org/10.1007/978-3-030-62412-5_22

Liu, X. (2018). Interviewing elites: Methodological issues confronting a novice. *International Journal of Qualitative Methods, 17*(1), 1–9. https://doi.org/10.1177/1609406918770323

Lobrij, M.-F., Kaptein, M., & Lückerath-Rovers, M. (2020). What national governance codes say about corporate culture. *Corporate Governance, 20*(5), 903–917. https://doi.org/10.1108/CG-08-2019-0254

Makani, J., & Marche, S. (2010). Towards a typology of knowledge-intensive organizations: Determinant factors. *Knowledge Management Research & Practice, 8*(3), 265–277. https://doi.org/10.1057/kmrp.2010.13

Makani, J., & Marche, S. (2012). Classifying organizations by knowledge intensity necessary next steps. *Journal of Knowledge Management, 16*(2), 243–266. https://doi.org/10.1108/13673271211218843

Mathew, J. (2019). Organisational culture and effectiveness: A multi-perspective analysis on Indian knowledge-intensive firm. *Employee Relations, 41*(3), 538–551. https://doi.org/10.1108/ER-09-2017-0219

Miklian, J., & Medina Bickel, J. P. (2017). Theorizing business and local peacebuilding through the "Footprints of peace" coffee project in rural Colombia. *Business & Society, 59*(4), 676–715. https://doi.org/10.1177/0007650317749441

Miroshnik, V. W. (2013). Organizational culture and commitment. In *Organizational culture and commitment.* Palgrave Macmillan. https://doi.org/10.1057/9781137361639

Murphy, R., & 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, 39*(9), 739–758. https://doi.org/10.1080/01446193.2021.1952632

Naor, M., Jones, J. S., Bernardes, E. S., Goldstein, S. M., & Schroeder, R. (2014). The culture-effectiveness link in a manufacturing context: A resource-based perspective. *Journal of World Business, 49*(3), 321–331. https://doi.org/10.1016/j.jwb.2013.06.003

National Science Board, National Science Foundation. (2020). *Science and engineering indicators 2020: The state of U.S. science and engineering.* NSB-2020-1.

Oparaocha, G. O. (2016). Towards building internal social network architecture that drives innovation: A social exchange theory perspective. *Journal of Knowledge Management, 20*(3), 534–556. https://doi.org/10.1108/JKM-06-2015-0212

Oyemomi, O., Liu, S., Neaga, I., Chen, H., & Nakpodia, F. (2019). How cultural impact on knowledge sharing contributes to organizational performance: Using the fsQCA approach. *Journal of Business Research, 94*, 313–319. https://doi.org/10.1016/j.jbusres.2018.02.027

Oz, M., Kaya, F., & Ciftci, I. (2015). Evaluating the organizational culture types of the 5-star hotel's in Istanbul in terms of the Cameron & Quinn competing values model. *Journal of Yasar University, 10*(40), 6684–6691. https://doi.org/10.19168/jyu.92229

Patton, M. Q. (2015). *Qualitative research & evaluation methods* (4th ed.). Sage publications.

Prange, C. (2009). Strategic alliance capability: Bridging the individual back into Inter-organizational collaboration. In D. Jemielniak & J. Kociatkiewicz (Eds.), *Handbook of research on knowledge-intensive organizations.* Information Science Reference. https://doi.org/10.4018/978-1-60566-176-6.ch024

Rotundo, G. J. Z., & Hernández, A. (2014). Origen de los recursos y ventajas competitivas de las organizaciones: reflexiones teóricas. *Revista Venezolana de Gerencia, 19*(68), 735–759. https://doi.org/10.31876/revista.v19i68.19129

Schein, E. H. (2004). *Organizational culture and leadership* (3rd ed.). Jossey Bass Publishers.

Sheehan, N. T. (2005). Why old tools won't work in the "new" knowledge economy. *Journal of Business Strategy, 26*(4), 53–60. https://doi.org/10.1108/02756660510608567

Skjolsvik, T., Pemer, F., & Lowendahl, B. R. (2017). Strategic management of professional service firms: Reviewing ABS journals and identifying key research themes. *Journal of Professions and Organization, 4*(2), 203–239. https://doi.org/10.1093/jpo/jox005

Stake, R. (1995). *The art of case study research.* Sage Publications, Inc.

Stake, R. (2005). Qualitative case studies. In N. K. Denzin & Y. S. Lincoln (Eds.), *Handbook of qualitative research.* Sage.

Stake, R. (2010). *Qualitative research: Studying how things work.* Guilford Press.

Starbuck, W. (1992). Learning by knowledge intensive firms. *Journal of Management Studies, 29*(6), 713–740. https://doi.org/10.1111/j.1467-6486.1992.tb00686.x

Suharti, L., & Sugiarto, A. (2020). A qualitative study of green HRM practices and their benefits in the organization: An Indonesian company experience. *Business: Theory and Practice, 21*(1), 200–211. https://doi.org/10.3846/btp.2020.11386

Swanson, R. A., & Holton, E. F. (2005). *Research in organizations. Foundation and methods of inquiry.* Berrett-Koehler Publishers, Inc.

Willmott, H. (1993). Strength is ignorance; slavery is freedom: Managing culture in modern organizations. *Journal of Management Studies, 30*(4), 515–552. https://doi.org/10.1111/j.1467-6486.1993.tb00315.x

Yang, F., Zhang, H., Xiao, T., Liu, J., Chai, C., & Zhou, P. (2020). Impacts of external involvement on new product development performance: Moderating role of organisational culture. *Technology Analysis & Strategic Management*, *33*(1), 70–83. https://doi.org/10.1080/09537325.2020.1790514

APPENDIX I: SEMI-STRUCTURED INTERVIEW GUIDE

A. Characteristics of a Knowledge Intensive Organization according to the typology proposed by Makani and Marche (2010).

Responsibility and decision making
1. How is the decision-making process in the company?

Competencies
2. At the managerial level, what are the core competencies?
3. At the operational level, what are the core competencies?

Nature of tasks
4. What is the main activity that the company develops?

5. Which people in the organization are in charge of the main activities of the company and in what way?

Body of knowledge
6. What are the main products or services of the company?
7. What are the characteristics of the company's products or services?

Dimensions of professional orientation
8. What are the characteristics of the company's management processes?
9. What is the employee evaluation process like?

B. Organizational Culture Variables according to Cameron and Quinn's model (2011)

Dominant characteristics
10. What are the most representative characteristics of this organization?
11. How do you think the employees define the organization?

Organizational leadership
12. What characterizes the leaders of this organization?
13. What stands out most about the relationship between leaders and followers in this organization?

Employee management
14. In relation to employees, how would you define the management style?

15. How would you describe the work climate of the organization?

Organizational cohesion
16. What characteristics of the organization's culture do you identify?
17. What do you believe are the values shared by the organization's employees?

Strategic emphasis
18. What do you consider to be the company's strategy?
19. What are the characteristics of the company's strategic plan?

Criteria for success
20. In what way is "success" conceived in this organization?
21. And how is "failure" conceived in this organization?

APPENDIX II

Table 1A. Consolidated criteria for reporting qualitative studies (COREQ) (source: adapted from COnsolidated criteria for REporting Qualitative research – COREQ)

No	Item	Guide questions / description
		Domain 1: Research team and reflexivity
		Personal characteristics
1	Interviewer / facilitator	Author 1 and author 2
2	Credentials	Author 1: Ph. D, author 2: Ph. D (c), author 3: Consultant and author 4: Director, research and development; regional director, Asia
3	Occupation	Author 1: Ph.D. in Psychology. Full Professor, School of Management, Universidad del Rosario, Bogotá-Colombia, author 2: Ph. D student of the program in Management Science, School of Management, Universidad del Rosario, Bogotá-Colombia, author 3: Psychologist, Consultant in Human Resources and author 4: Ph.D. in agricultural sciences, a Master of Science in agricultural sciences with a focus on plant production, and a bachelor's degree in agricultural economics from the University of Hohenheim, Germany.
4	Gender	Author 1: Female, author 2: Male, author 3: Male and author 4: Male
5	Experience and training	Author 1: 3 years of experience in qualitative research. Training in Thematic and Discourse Analysis. Author 2: 3 years of experience in qualitative research. Specifically working with Knowledge Intensive Firms. Author 3: Most of 30 years in field research (qualitative and quantitative). Managerial positions in KIFs and Author 4: 35 years of experience in crop improvement, commercialization, and international agriculture.
		Relationship with participants
6	Relationship established	There is relationship between the participant and authors 1 and 3, from before the research began.
7	Participant knowledge of the interviewer	The participant was provided with a brief description of the interviewers. Was also provided with the following information related to the research: the objective of the study and the informed consent document in which is explained how the interview was carried on and how the data was handled.
8	Interviewer characteristics	See No. 7.
		Domain 2: study design
		Theoretical framework
9	Methodological orientation and theory	In the present research a qualitative approach was selected. The design is an intrinsic case study with thematic analysis.

No	Item	Guide questions / description
		Participant selection
10	Sampling	The participant organization was selected by a paradigmatic case sampling
11	Method of approach	Face to face.
12	Sample size	An organization located in: Km 17 Recta Cali-Palmira CP 763537, Cali, Colombia.
13	Non-participation	0 rejects.
		Setting
14	Setting of data collection	The selected information gathering techniques are the semi-structured interview and documentary analysis.
15	Presence of non-participants	There were no other participants during the interview with the Global Director of Product Development and Commercialization (GDPDC) of HarvestPlus.
16	Description of sample	The own perceptions and interpretations from the Global Director of Product Development and Commercialization (GDPDC) from HarvestPlus, were gathered.
		Data collection
17	Interview guide	A question guide was developed, categorized in two sections. The first section includes nine questions that inquired about the characteristics of a Knowledge Intensive Firm according to the typology in Makani and Marche (2010). The second section includes 12 questions aiming to identify the organizational culture using the Cameron and Quinn (2011) model.
18	Repeat interviews	No interviews were repeated.
19	Audio/visual recording	The audio recording was authorized by the participant in advance.
10	Field notes	–
11	Duration	The total length of the audio recording is 83.18 minutes.
12	Data saturation	The data saturation was carried out through theoretical sampling, which consists of searching for and collecting new information, with the intention of obtaining specific and essential data on a category and its properties.
13	Transcripts returned	The participant was not provided with the transcription of the interview for its revision.
		Domain 3: analysis and findings
		Data analysis
14	Number of data coders	The data processing was carried on by author 1 and author 2 together.
15	Description of the coding tree	The typology of a knowledge-intensive firm, competing values model and organizational culture – VRIO are described in section 2 (theoretical framework) of the article.
16	Derivation of themes	Deductive creation of codes was used to process information coding. This method implies defining the name of codes based on the theory's suggestion, without preventing the emergence of additional content.
17	Software	Nvivo 12 Plus
18	Participant checking	The Global Director of Product Development and Commercialization (GDPDC) of HarvestPlus commented about the study findings.
		Reporting
19	Quotations presented	The participant's quotations were presented in order to illustrate the themes and findings. In these quotations the participant was personally identified, with his own previous authorization and authorization from the company as well.
20	Data and findings consistent	In the findings, the theoretical framework on which the present study was based was always taken as a reference.
21	Clarity of major themes	The main topics were developed in Section 1 (Theoretical framework) and in Section 4 (Results)
22	Clarity of minor themes	The secondary themes were examined in Section 7 (Managerial relevance and policy) of the article.