

The relevant motivator elements in becoming an academic entrepreneur

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Abstract

This study aims to understand the motivation behind academic entrepreneurs launching their business ideas as a company. To accomplish this objective, we analysed the reasons that motivated seventy-four academic entrepreneurs. The results showed that there is no single motivating element for starting an entrepreneurial project for academic entrepreneurs. Among them, the identification of a business opportunity, the existence of a support network and the possibility of having qualified staff to manage them are considered relevant elements. The results of this study may be useful for researchers and agents elaborating on successful public policies for academic entrepreneurship. Due to their scientific base, these types of companies become key in improving the innovation capacity of a territory and the effect on the rest of society in general.

Keywords: *academic entrepreneurship, motivation for entrepreneurship, spin-off, technology-based company, business opportunity.*

Introduction

The establishment of high-tech companies by professors and researchers from universities and institutions helps advance the economic improvement of a territory (Guo et al., 2019; Iwu et al., 2021). The promotion of entrepreneurship in different fields has special relevance worldwide (Dorji, 2021). Traditionally, research has been considered one of the most relevant objectives of the university, however, nowadays it is necessary that they also favour economic growth and development (Sciarelli et al., 2021). The so-called spin-offs constitute one of the main mechanisms of knowledge transfer from research centres and universities to the business and industrial world (Mathisen & Rasmussen, 2019).

Current global competitiveness indicates an increasing demand for better products. As a result, companies in different countries need to be innovative (Boone et al., 2019; Palos-Sánchez et al., 2019). Following the success of other countries and also because of improvements in the standard of living, the scientific and technological growth of this type of company is being promoted, in

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particular, the spin-offs. Academic entrepreneurs feel more capable of starting an academic venture due to the concepts of entrepreneurship and university being increasingly linked (Hambali, 2019). They are now playing a fundamental role in the socio-economic development of society (Davey & Galan-Muros, 2020).

There is no definitive definition of the phenomenon of spin-offs although several studies have addressed this reality (Galati et al., 2020). It could be established that an academic spin-off is a type of company created by the teaching and research staff of a university due to a research project (Fuster et al., 2019; Sheng & Shiquan, 2020). They aim to utilise a business opportunity based on the knowledge and/or scientific results acquired in a university environment (Hesse & Sternberg 2017). This way an academic entrepreneur can effectively transfer their knowledge to the industry (Hessels et al., 2021; Mathisen & Rasmussen, 2019). This is crucial for universities to achieve their purpose of transferring knowledge to society and companies (Miller et al., 2017). They are also an instrument for the development of a territory (Hayter et al., 2018; Olo et al., 2021). Spin-offs also are important because allow the commercialisation of research results that would otherwise have remained undeveloped (Mathisen & Rasmussen, 2019).

University support for academic entrepreneurship is increasingly in demand. However, the knowledge of what are the real elements that lead academic scientists to opt for entrepreneurship is not yet clearly identified by universities (Wang et al., 2022). It is important to know what the real motivators are for launching an academic spin-off. Sometimes these types of entrepreneurs, if they do not have clear objectives as a company, may focus on testing the new technology and not so much on satisfying the needs of the market (Buratti et al., 2021). Spin-offs are a reality that has yet to be analysed in depth. The dual nature, entrepreneurial and academic (Sheng & Shiquan, 2020) of them recommends the study of what are the real motivating elements for these academic entrepreneurs. This article addresses and responds to this pending space in related research, of particular relevance both at the theoretical and practical level for the university and society in general.

The study aims to identify and analyse the elements that motivate academic entrepreneurs to launch their business ideas as a company. The results showed that the relevant motivating elements for entrepreneurship are a set of motivational factors that influence a person's behaviour (Daliman et

al., 2019) and include identifying a business opportunity (even in adverse circumstances), the possibility of having a qualified person managing their business, and the existence of a support network. However, the availability of resources, elements related to the environment, the role model, and attitude towards business creation are not considered motivating elements for entrepreneurship in a relevant way.

To achieve the objective of this paper, this article has been structured in the following sections in addition to this introduction. First, the most significant arguments from the literature review are presented. These concepts, for a better understanding, are addressed individually and connected to other realities. Next, the most relevant methodological aspects for obtaining the results derived from the empirical work are presented. The results obtained are then discussed based on the research questions and finally, the most relevant conclusions are presented together with the limitations of this work and a research agenda.

Review of literature

A review of the antecedents of this study of the elements that motivated academic entrepreneurs when launching a business project found that there have been different studies and results when investigating the key motivating elements. A sample of the most prominent studies can be seen in Table 1.

Autio & Kauranen (1994) analysed the existence of a triggering event in the business creation phenomenon. The authors, through quantitative research on 104 spin-off founders and 22 non-entrepreneurial researchers, established a series of possible motivational items that could be grouped into external, personal, market pull, and technology push.

The academic entrepreneur is key to launching spin-offs (Meoli et al., 2019). This is due to a series of individual actions arising from qualities like personality, skills and competencies, professional career and the willingness to participate in business activities (Qian et al., 2018).

Table 1*The background to the study of the motivating elements for academic entrepreneurs*

Research work	Main motivating elements for academic entrepreneurship
(Doutriaux & Peterman, 1982)	Boredom with the academic routine. The value of independence and freedom at work
(Samsom & Gurdon, 1990)	The opportunity to create a company and become an entrepreneur. The opportunity to make money/wealth.
(Doutriaux & Dew, 1992)	Making money from a share in the capital Obtaining greater benefit from a technology transfer
(Autio & Kauranen, 1994)	Making the most of the external opportunities Personal motivation Taking advantage of market opportunities Using technology practically
(Weatherston, 1995)	Economic Desire for freedom Distrusting the companies' ability to market a product The need to keep control of a personal invention Job dissatisfaction
(Chiesa & Piccaluga, 2000)	The identification of market opportunities Economic The need to exploit an idea. Aversion to bureaucracy Unstable research environment Personal success and need for independence
(Shane, 2004)	Desire to put technology into practice Desire for wealth The desire for independence
(Prodan & Slavec, 2009)	Dissatisfaction with the academic environment The desire to secure permanent employment The desire to take on broader responsibilities The desire to obtain wealth The desire to put technology into practice The desire to disseminate results in scientific literature and continue perfecting the technology The desire to acquire more research funding
(Wennberg et al., 2010)	Broadening experiences Professional development
(Novotny, 2014)	Dissatisfaction with the university salary Motivation has an important impact on subjective success
(Berbegal-Mirabent et al., 2018)	Intrinsic motivation Extrinsic motivation Prosocial motivation
(Davey & Galan-Muros, 2020)	Obtain funding/financial resources Increase my chance of promotion Improve my reputation within the university Use my research in practice Gain new insights for research Contribute to the mission of the university Address societal challenges and issues

Lauto et al. (2009) addressed the reasons for the motivation of academic entrepreneurs, where they studied 249 academic entrepreneurs from multiple disciplines working in Italian universities. Prodan & Drnovsek (2010) intended to fill the existing gap in the literature about the determinants and characteristics of the processes that guide entrepreneurs when utilising their entrepreneurial

intentions. The authors also proposed a conceptual model of the intentions of academic entrepreneurs.

Goethner et al. (2011) showed the relationship between the attitude and the perception of control of entrepreneurs, and the prediction of entrepreneurial intentions when launching a business idea. These authors also showed how economic, human and social capital factors indirectly affected entrepreneurial attitude and perception of control in entrepreneurs. Renault & Mello (2011) studied the economic, human and, more importantly, the technological resources the entrepreneurs had in the organisations where they worked, as potential motivator elements. The academic unit's business orientation and the availability of social capital, finance and resources as driving forces of spin-offs in the organisation were also studied.

García-Cabrera et al. (2017) analysed 296 academic entrepreneurs who founded their companies in Brazil to determine whether business internationalization decisions are conditioned by entrepreneurial motivation of them. They concluded that entrepreneurial motivation to seize opportunities affects the decisions made throughout the company's entire journey. The study also takes into consideration that authorities must try to stimulate the creation of more companies by motivating academic entrepreneurs to generate higher rates of wealth and employment. Therefore, methods to promote academic entrepreneurial motivation must be available for this to happen.

Research Questions

Based on the above, we can establish (grouped in five main groups) the most relevant motivational elements for academic entrepreneurs: Identifying a business opportunity, the desire to apply knowledge, the motivation (internal and external), the availability of resources and the influence of the environment.

From these five groups of motivational elements, the six following research questions can be established in this article:

Q1. Does the identification of a business opportunity directly and positively influence academic entrepreneurs to launch their business ideas as a company?

Q2. Do the desire to apply the knowledge and the desire to transfer it directly and positively influence academic entrepreneurs to launch their business ideas as a company?

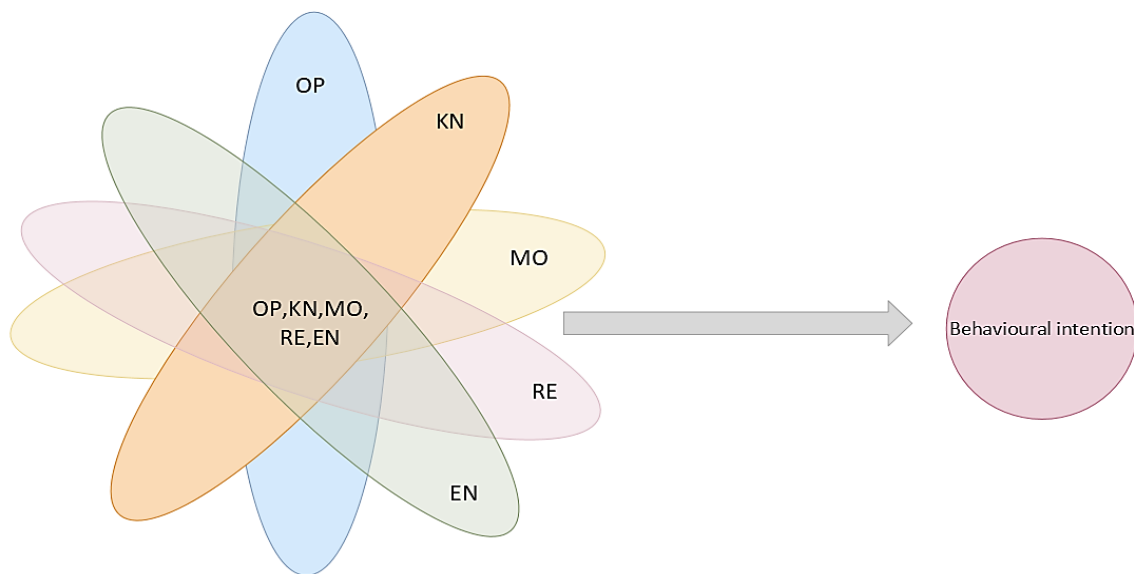
Q3. Does personal motivation directly and positively influence academic entrepreneurs to launch their business ideas as a company?

Q4. Does the previous organisation directly and positively influence academic entrepreneurs to launch their business ideas as a company?

Q5. Does the availability of resources directly and positively influence academic entrepreneurs to launch their business ideas as a company?

Q6. Do the family environment and the attitudes of society toward the creation of companies influence academic entrepreneurs to launch their business ideas as a company?

Based on the theoretical foundations, the model to be tested in this research is illustrated in Figure 1.



OP: Opportunity, N:Knowledge,MO:Motivations,RE:Resources,EN:Environment, BI: Behavioural Intention

Figure 1. Proposed model

Method

Sample

The study population was chosen from public universities in Costa Rica and Spain. All subjects had connections with the production sector, identified a business opportunity from a research process and created a company. The basic knowledge of the company can be either tacit or explicit.

Seventy-six academic entrepreneurs from sixty-eight academic spin-offs were identified and asked to participate in the study. The response rate was 97%, and 74 academic entrepreneurs were used as the sample for this study as can be seen in Table 2.

Table 2

Description of sample

		Percentage (%)
Gender	Men	86.36
	Women	13.64
Age	23-35	13.60
	36-55	36.40
	≥ 56	50.00
Area of Knowledge at University of Academic Entrepreneurs	Health Science	11.36
	Social Science and Law	18.18
	Sciences	15.90
	Engineering & Architecture	52.27
	Art & Humanities	2.27
Business sector Spin-offs	Agriculture	22.80
	Industry	27.20
	Services	50.00

Instrument

The instrument used is based on the theoretical proposal of Autio & Kauranen (1994), which established forty items organised into four groups that are possible motivating elements for the decision to create a company. These are a) opportunity, b) personal motivation, c) technology development and d) market development. Some items were adapted to facilitate the reader's understanding, thereby resulting in questions on thirty-five different items. These elements were grouped into six categories: a) opportunity, b) knowledge, c) personal motivation, d) previous organisation motivation, e) available resources and f) environment.

A Likert 5-point scale was used to measure the opinions of academic entrepreneurs regarding the motivating elements when launching a business.

Table 3 shows the Cronbach's α and AVE calculated for the constructs. Cronbach's α values ranged from 0.866 to 0.978, thus exceeding the recommended level of 0.70, and indicating strong internal reliability for the constructs. The composite reliability ranged from 0.867 to 1.015, whereas the AVE ranged from 0.882 to 0.922. Both are above the recommended minimum levels.

Table 3*Cronbach alpha, CR, and AVE*

	Cronbach Alpha	Composite Reliability	Average Variance Extracted (AVE)
Knowledge	0.960	0.961	0.927
Environment	0.947	1.015	0.857
Previous Organisation	0.978	0.978	0.919
Personal Motivation	0.915	0.924	0.922
Behavioural Intention	0.866	0.867	0.882
Opportunity	0.956	0.957	0.885
Resources	0.955	0.986	0.755

Data collection

Responses were collected through a questionnaire distributed online via e-mail. To ensure the veracity of the respondents' answers, participation in the survey was voluntary. In addition, the process was monitored to make sure that none of the respondents replied twice, something that might have affected the consistency and reliability of the answers to the questionnaire.

Data analysis

The results derived from the data obtained were analysed using the PLS-SEM and the fs-QCA techniques.

PLS-SEM is considered very suitable for exploratory studies and analysis, like in this case (Hair et al., 2017; Henseler et al., 2016). This technique is being widely used in social sciences and organisations (Sosik et al., 2009). We report recent studies in the fields of management (Garro-Abarca et al., 2020), decision-making (Saura et al., 2020), IT (Palos-Sanchez et al., 2019), hospitality and tourism (Hernandez-Rojas et al., 2021) and cryptocurrencies adoption (Palos-Sanchez et al., 2021).

The fs-QCA technique is characterised by starting from a complex potential causality while focusing on asymmetric relationships. To determine the likelihood of producing a specific result, the necessary and sufficient conditions must be studied (Duarte & Pinho, 2019).

An exploratory analysis of the data has been carried out to detect the existence of missing values, outliers, and underlying statistical assumptions (normality, linearity of relationships, multicollinearity).

For the total results, less than 10% of the missing data were observed. No notable outliers outside the specified range were observed. For the estimation of normality, the arithmetic means, the standard deviation of the distribution, skewness, and kurtosis values were calculated. All elements presented a distribution close to normal with skewness and kurtosis values below ± 2 , except for two elements that were at a value of 3. Values in the range [-1, + 1] (Ferrando & Anguiano-Carrasco, 2010) [-1.5, + 1.5] (Gallardo-Pujol et al., 2009), or even [-2, + 2] (Lloret-Segura et al., 2014) are considered acceptable.

Concerning normality, Wolf (1980) states that partial least squares structural equation modelling (PLS-SEM) does not require the conditions demanded by traditional covariance structural equation modelling (CBSEM) with respect to statistical distributions (normality of the data concerning the observed variables); that is, they use nonparametric tests, thus allowing a non-normal distribution for the analysis (Rojas & Abarca, 2014). PLS models are used in predictive and non-confirmatory situations. The PLS methodology does not assume normality and estimates by recursive least squares, which is recommended in cases of small samples and using a regression scheme with "weak" assumptions.

Research Design

The methodology used in this research is non-experimental and based on a correlational design. This has been carried out to demonstrate the relationship between the variables analysed. With this correlational design, it is not possible to analyse the cause-effect relationship, but it is possible to suspect that there is a causal relationship.

Therefore, this work aims to analyse the relationship between the factors included in the model and the degree of intention or motivation to carry out.

This type of research based on a correlational design aims to find the relationship or the degree of relationship between some concepts, categories, or variables in a particular context (Cabanillas & Mori, 2018). In this way, the degree of relationship between two or more variables is evaluated, measuring each one of them to subsequently quantify and analyse their link with the variable studied, based on hypotheses subjected to a test of acceptance or rejection.

Results

The results obtained after processing the data collected using the PLS-SEM and fs-QCA technique allow us to answer the research questions of this work.

As can be seen in Figure 2, this shows the results obtained concerning the structural model tested.

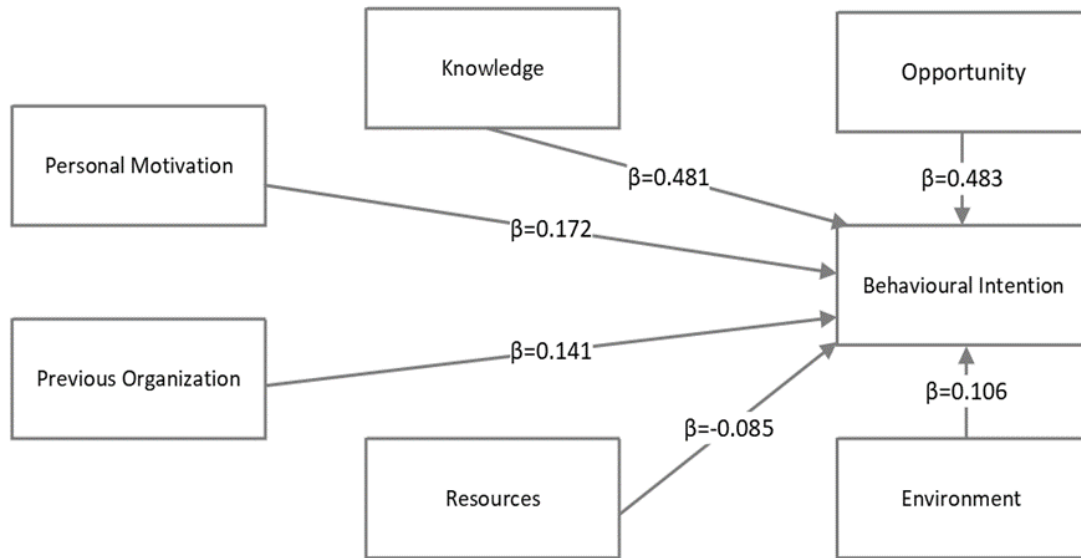


Figure 2. Structural Model

Therefore, the result of the influence of the relationships between the different elements that affect entrepreneurial intention can be seen in Table 4.

Table 4

Path coefficients (β)

Relationships	β (standard path coefficients)	Supported
KN → BI	0.481	Yes
EN → BI	0.106	Yes
PM → BI	0.141	Yes
PO → BI	0.172	Yes
OP → BI	0.483	Yes
RE → BI	-0.085	No

A significant and positive relationship has been confirmed between the variables, like knowledge, environment, personal motivations, organisation of origin, and opportunity. In contrast, the

environment has insignificant weight and there is a negative relationship between the environment and entrepreneurial intention.

R^2 represents a predictive value measure that indicates the amount of variance of a construct explained by the endogenous construct's predictor variables, with the values ranging from zero to one. The results of the model showed it has a high predictive power, with the total variance being 97.1%. In terms of the factors predicting entrepreneurial intention, the opportunity had the greatest influence, followed by knowledge, personal motivations, and the origin of the organisation.

Considering the existence of multiple possibilities regarding the achievement of a high academic entrepreneurial intention, we carried out an fs-QCA analysis.

Table 5 presents the configurations that explain the existence of academic entrepreneurial intention using the intermediate solution. The solutions provide coverage of 0.931 and consistency of 0.959, which indicates that 93.10% of cases with an outcome of interest are covered by the solution. This consistency shows that 95.90% of the cases covered by the configurations have an interesting outcome. Both measures meet the required thresholds and are therefore considered a valid solution.

Table 5

Configurations of the conditions for Behavioural Intention (BI outcome variable)

Configuration	1	2	3
Opportunity		●	●
Knowledge	●	●	●
Personal Motivation		●	●
Previous Organisation	●	⊗	⊗
Resources	⊗	●	
Environment	⊗		⊗
Consistency	0.953824	0.981464	0.990276
Raw Coverage	0.518431	0.844444	0.638954
Unique Coverage	0.0253596	0.267451	0.0360785
Overall solution consistency	0.959613		
Overall solution coverage	0.931765		

Note: condition present (●), condition absent (⊗)

The analysis of the solutions that explain the intention to undertake in the academic area shows how the set of opportunities, knowledge and personal motivations in the absence of the previous organisation variable shows greater consistency. The presence of knowledge, opportunity and personal motivations in the three intermediate solutions indicate the importance of the relationship between these variables with high entrepreneurial intention.

Table 6 shows the configurations to explain the non-occurrence of entrepreneurial intention by analysing the intermediate solution. These configurations have a coverage of 0.845 and a consistency of 0.840. The intermediate solution shows three configurations, with a low level of the environment variable being present in all three. There is also a low level of personal motivation, prior organisation, resources, environment and high knowledge present in the first configuration. In the second, there is both a low level of previous organisation and environment and a high level of opportunity, knowledge and personal motivation. However, in the third, the only variable present is pre-organisation, with the others being absent.

Table 6

Configurations of the conditions for Behavioral Intention (~BI outcome variable)

Configuration	1	2	3
Opportunity		●	⊗
Knowledge	●	●	⊗
Personal Motivation	⊗	●	⊗
Previous Organisation	⊗	⊗	●
Resources	⊗		⊗
Environment	⊗	⊗	⊗
Consistency	0.955267	0.797002	0.978435
Raw Coverage	0.555525	0.55021	0.786853
Unique Coverage	0.0148252	0.0363637	0.253706
Overall solution consistency	0.840423		
Overall solution coverage	0.845595		

Note: condition present (●), condition absent (⊗)

This section answers the six research questions posed in this work derived from the five hypotheses established in the proposed model on the main motivational elements for being an academic entrepreneur in the university environment:

Q1. Does the identification of a business opportunity directly and positively influence academic entrepreneurs to launch their business ideas as a company?

The most important motivating element when launching a business idea is converting it into a product and/or service. This element has an average score of 4.38 and 59.5% of entrepreneurs rated it as very important. Identifying customers' needs to obtain an average of 4.31 between important and very important and it has a frequency of 88.10%.

Therefore, it can be said that identifying an opportunity is a relevant motivating element for launching a business idea for academic entrepreneurs.

Q2. Do the desire to apply the knowledge and the desire to transfer it directly and positively influence academic entrepreneurs to launch their business ideas as a company?

In this section, we analyse two motivational elements: the desire to apply knowledge and the desire to transfer it. The most important of these is the desire to apply knowledge. 88.10% considered the willingness to advance technical knowledge to be important or very important, while 74.50% considered putting the acquired knowledge into practice as important or very important.

The willingness to transfer knowledge had an average score of 3.99. This was due to the high value given to scientific knowledge and it being an exclusive motivating element in creating companies. Adding value to the company's knowledge base obtained a score of 80.50%, lying between important and very important. The exclusivity of the available knowledge (the non-existence of that knowledge in other R&D environments) obtained a score of 70%, lying between important and very important. Finally, the difficulty in transferring the basic knowledge of the company in the university environment showed a score of 60%.

Q3. Does personal motivation directly and positively influence academic entrepreneurs to launch their business ideas as a company?

Elements of personal motivation when starting a business idea obtained an aggregate average of 4.02, which excludes the average desire for wealth. We grouped the elements into three subsets, and the results were: the desire to achieve results had an average score of 4.15, the need to be independent had an average score of 3.88, and the desire for wealth had an average score of 2.84.

Therefore, the desire to achieve results was the primary reason for launching a business idea, followed by the need to be independent and, finally, the desire for wealth. In the most important group, the willingness to work with one's ideas received the highest rating of 4.36 with a frequency of 59.10%, which is very important. The desire to assume and fulfil broader responsibilities showed an average score of 3.93 and a frequency of 53.50%, and this is very important. The desire to test one's ability to create a new company is also very important and had an average score and a frequency of 3.37 and 37.20%, respectively. The element with the lowest average score in this subgroup was the desire to do something that others could not, which had an average score of 3.00

(considered very important) and had a frequency of 38.10%. Therefore, these results show that working with one's ideas and the desire to assume and fulfil broader responsibilities are the main motivating elements in this group.

The subgroup of the need to be independent as a motivating element when launching a business idea had an aggregate average score of 3.88. Both the desire for independence and the advantages of self-employment had an average score of 3.89 with a frequency of 59.10% and 54.50%, respectively, and both were valued as very important. Having a job offering better opportunities and facing difficulties than the previous professional career had the lowest scores of 2.68 and 2.12, respectively. The desire for wealth, i.e., the desire to earn more money than working for a salary, had an average score of 2.12 and a frequency of 47.70%, and it was considered unimportant.

Q4. Does the previous organisation directly and positively influence academic entrepreneurs to launch their business ideas as a company?

The previous organisation is very important in the decision to create a company. Companies are created so that the academic entrepreneur can leave their current organisation and thus seize the opportunities this gives them. It is the case of some authors who state the academic entrepreneur encounters more barriers than help when trying to approach the home organisation when launching a business idea. Some entrepreneurs felt that the managers of their previous organisations did everything possible to make business initiatives fail.

Q5. Does the availability of resources directly and positively influence academic entrepreneurs to launch their business ideas as a company?

The available resources for starting a company are divided into two subgroups: financial resources and social resources. The most important element of both groups was to have readily available social resources, and in this subgroup, the most important point was that contacts be available for starting the company and also an available network of contacts in the potential market.

These elements, which were considered very important, had average scores of 3.58 and 3.66, respectively, and had frequencies of 45.00% and 43.90%, respectively.

Q6. Do the family environment and the attitudes of society toward the creation of companies influence academic entrepreneurs to launch their business ideas as a company?

An academic entrepreneur gains motivation from two subgroups: (1) the influence of family business roles and (2) society's attitudes towards the creation of companies.

The family was found to have very little importance with academic entrepreneurs, as 70.80% stated that no entrepreneurial family figure had influenced their entrepreneurship. However, 24.40% also stated that it was important to them that a family member was an entrepreneur. The average score was only 2.10 points. Having a successful company as a role model which evaluates the influence of known entrepreneurs had an average of 2.80. This was considered either not or not very important by 33.90% and to either be important or very important by 29.60%.

The results obtained from the test of the hypotheses based on the proposed model have surprisingly shown that the availability of resources is not the main element for being an academic entrepreneur. The direct and positive influence of knowledge and the Identification of a business opportunity stand out above the rest of the hypotheses as real motivating elements for these potential entrepreneurs.

The direct and positive influence of knowledge and the Identification of a business opportunity stand out above the rest of the hypotheses as real motivating elements for these potential entrepreneurs.

To a lesser extent, although also in a direct and positive way, the elements of motivation itself, the perception of support from the university or research centre, as well as from the entrepreneur's own environment stand out.

Discussion

This study shows that the results of opportunity and knowledge as a motivating element differ in some cases from other reports. Similarly, in the case of the availability of resources to start a business, it is surprisingly not a relevant motivating element. The positive relationship of knowledge, motivation of the entrepreneur, and support from the previous organisation together with the environment of the potential entrepreneur is found to be aligned with the results of other related work.

In the case of Autio & Kauranen (1994), they found that identifying the needs of potential customers and/or deficiencies in existing products were the most important factor. They found this

to be the fourth most important factor when finding a good market opportunity (Shane, 2000). However, it also shared similar results with us, where they stated that identifying a business opportunity was an important motivating element.

However, the results of this study contrast with Hossinger et al. (2020) who establish that identifying a business opportunity should not be considered as a part of the motivation for launching a business idea, but as an independent element having wider relevance and should therefore be studied further to understand its effects on the behaviour of entrepreneurs.

The study found that both identifying a new product and/or service idea and identifying potential clients' needs are the most important motivational elements for academic entrepreneurs. We eliminated the following factors as the results showed they were not important motivating elements: difficulties when exploiting a patent and discovering a new production method.

Our results showed that unsurprisingly, knowledge as a motivating element is important for academic entrepreneurs, as scientists are usually interested in knowledge-based and technological companies. However, this can give excess value to a company's knowledge and the scientific-technical part and relegate other important aspects like customers, marketing and administration.

In the case of these authors, they found that the achievement subgroup is the most important part of personal motivation for academic entrepreneurs. The results obtained show that both the desire to work with one's ideas and the desire to take on and fulfil broader responsibilities are the most important factors in this subgroup.

On the other hand, it is important to take into the results related to the previous organisation. In this case, we also found that the previous organisation is a very important motivating element. The frequently interviewed academic entrepreneurs commented that the organisational culture and institutional authorities disagreed with their entrepreneurial initiatives due to their incompatibility with the organisation's academic functions organisation. This disagreement led them to decide to leave the academic organisation to fully devote themselves to the company.

Regarding the influence of the environment the results showed that examples of other successful entrepreneurs had a greater impact on academic entrepreneurs than on the family entrepreneurial tradition. However, both elements are well below the minimum value to be important, so we

concluded that role models have little or no influence on the decision to launch a business idea. Our results also showed that the role and attitude towards the creation of companies were not considered motivation to create a company.

We can highlight that the main motivation for academic entrepreneurs to create a company includes opportunity, previous organisation, knowledge, and personal motivation. Entrepreneurs consider business opportunities so important that, even though the university environment is unfavourable for utilising them, they always look for ways to launch their projects. This can be done either by reducing their responsibilities at the university or leaving the university completely since they are interested in applying and transferring their knowledge to society. Personal fulfilment via the feeling of achievement and independence brought about by the entrepreneurial idea is another motivational element for the entrepreneur.

We used previous studies by Autio & Kauranen (1994) as a reference for this study because they investigated motivation from different points of view and formed constructs that allowed both the subject to be studied and comparisons to be made. Our study is based on the already established theoretical framework. Previous research found that opportunity was a separate motivation construct and hence they did not include it in their results. However, in this study, we included opportunity as one of the motivating elements for launching a business idea (García-Cabrera et al., 2017).

Conclusions

In light of the empirical results and their discussion, we highlight those that could be considered the main conclusions drawn from this work. The study results showed that identifying a business opportunity and the knowledge are the most important motivations for an entrepreneur launching their business idea, followed by dissatisfaction with their previous organisation of origin and personal motivations. However, the availability of resources, especially financial ones, does not motivate academic entrepreneurs to launch projects. Social resources, like the availability of an appropriate individual as the company's manager, having production facilities, or the existence of a business incubator, are reasons for starting a company. In the case of having contacts to help start the company and the availability of a potential market network are considered valuable resources when launching a business idea.

Motivation from the environment, like role models and attitude towards the creation of companies, did not motivate academic entrepreneurs to launch their business ideas. Entrepreneurs consider business opportunities so important that even though the university environment is unfavourable for utilising them, they search for ways to launch their projects. This can be done either by reducing their responsibilities at the university or quitting the university completely, as the entrepreneur is interested more in applying and transferring their knowledge to society.

This work, like any other study, suffers from some limitations. These limitations are particularly related to the size of the sample. The low number of spin-offs analysed makes it necessary to be cautious when extrapolating conclusions from one territory to another. A larger number of observations in the sample would have partially helped in mitigating this potential limitation. Also, it is also important to consider that this is a cross-sectional study, as only longitudinal studies can ensure the existence of causal relationships.

Regarding the potential future avenues of research which can be derived from our study, the effect that the legislation of different territories may have on the start-up of spin-offs can be analysed. Another potential line of research is related to what universities do and how they do it to promote the transmission of knowledge generated through the creation of spin-offs.

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