

Article

Business Survival and the Influence of Innovation on Entrepreneurs in Business Incubators

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Abstract: One of the objectives of this article is to study how innovation influences the results of entrepreneurs located in business incubators. The other objective is to examine how the training of entrepreneurs contributes to creating companies with high sustainability rates over time that are wealth generators in society. To achieve these objectives, entrepreneurs in business incubators in Spain were identified along with their level of training, their experience in business management, how much employment they have generated, their survival rate and the annual accounts (where economic, financial, and management information on the companies is collected). In turn, they were sent a questionnaire that allowed us to classify them by their degree of innovation. The techniques used are independent sample statistics that apply the Levene's test, the analysis of the balance sheet, the income statements, and management indicators. This study concludes that, from the selected sample, 83.3% of the entrepreneurs established in business incubators in Spain have university training, and 64.2% prefer the branches of science, with 7.75 years of business experience, which favors business survival (100% in the seventh year of life) and the creation of qualified employment. All this favors the sustainability of the productive and business model which, being more intensive in knowledge and R&D, becomes more competitive in the market. On the other hand, there are no significant differences regarding the economic results, nor in the management indicators among the entrepreneurs of the incubators according to their degree of innovation. The value of research lies in the importance of studies on the relationship between innovation, training, and wealth-generating sustainability in incubators in today's knowledge economy.

Keywords: business incubators; innovation; entrepreneurship; sustainability; survival analysis; self-employment

1. Introduction

In today's economy, where the market is increasingly competitive, knowledge-intensive activities and new technologies are becoming very important as the main competitive advantage of companies. The aim of this article is therefore to examine whether innovation has a positive impact on business profitability [1] and whether the training of entrepreneurs with the help of incubators contributes to creating businesses with high survival rates [2].

The historical origin of business incubators is located in Batavia (New York, NY, USA) in 1959 [3], and spread across the United States, where there are world-famous cases, such as the Silicon Valley industrial park and the Stanford Research Park, both created by Stanford University. However, it was not until the 1970s that public action was taken on this issue through programs such as the

Economic Development Administration (EDA) and the National Science Foundation (NSF), in the search for economic development and the creation of new sustainable companies over time. In Europe, business incubators appeared primarily in the United Kingdom as a result of the joint action of the British Steel Corporation and the European Union, which facilitated the implementation of initiatives in the establishment and support of companies, as well as the generation of new jobs [4]. Incubators play a key role in the process of economic development of communities, providing entrepreneurs with the instruments and services necessary to accelerate the growth and success of business projects [5]. Business incubators become a great support for small businesses by providing services such as networking services, capital support and training programs, and by mediating between business creation and government regulations for entrepreneurship. This is why business incubators can play an essential role in boosting small business development [6].

On the other hand, business incubators maximize the adjustment between the services they provide and the specific needs of new businesses, in addition to monitoring their performance, which allows them to detect risks and avoid mistakes [7].

It should be noted that a business incubator center is an effective method for stimulating sustainable economic growth [8] (p. 18), since it has a positive effect on social, technical, and financial indicators, and its cost of creating new jobs is six times lower than that of other types of investments.

There are more than 7000 incubator programs around the world [9]. At the beginning of the 21st century, there were 900 incubators in the US, a pioneer country in these initiatives, creating more than 19,000 companies and 245,000 jobs in a single year [10]. In the case of Europe, Germany stands out as the European country with the greatest number of incubators, followed by France and the United Kingdom [11]. In Spain, it is estimated that there are around 300 incubators, where Catalonia has the largest number [12].

Since their origin, business incubators have evolved from being just a physical space for entrepreneurs to currently being a multidisciplinary offer of services, giving rise to important changes in their operation and actions, and introducing a new concept of incubator [13]. The growing need to orient its services to an increasingly competitive market becomes evident [5].

2. Literature Review and Conceptualization of the Business Incubator

It is important to conceptualize what the academic world understands as a business incubator. These are facilities where spaces are temporarily made available for the undertaking of R&D (Research & Development) activities and which are usually located near an academic institution and/or research center [14]. Originally, incubators simply offered a physical space for companies to install and share equipment, information (on permits, patents, loans...), receive support and advice on management and marketing techniques, enjoy basic services at low cost, and find access to capital [15–17].

Business incubators are organizations that promote the creation of companies whose service extends to activities of innovation advice and training of entrepreneurs [18,19]. This is a development policy for generating spaces where business activities are carried out in the early stages of productive development, since technical assistance and support are provided for the establishment of the company [20]. In this way, they have become instruments of economic development and job creation [4,21].

The incubators are also described as facilities created and enhanced in a specific area whose objective is the development of SME (Small and Medium-sized Enterprises) projects, usually financed by the public sector, as it is considered a contribution to local and regional development [22]. An incubator would be an institution financed largely by public funds whose objective is the creation of competitive companies with high survival rates, which allow the generation of sustainable jobs and contribute to local and regional development [23]. For this purpose, they offer a space and a set of services for a limited time (given that they are financed with public resources, it is not possible to perpetuate non-competitive companies by generating unfair competition). In short, it is concluded that business incubators contribute directly and indirectly to national development [24].

Small and medium-sized enterprises play a crucial role in generating economic growth, job creation, and sustainable development [25] (p. 20). For this reason, the entrepreneur, as the person primarily responsible for the survival and success of the business, must have problem-solving skills, as well as confidence in their ability to solve challenges, adaptive assertiveness, and entrepreneurial self-efficacy [25].

On the other hand, a study on the level of satisfaction with the services offered by incubators reveals that incubated businesses prioritize: collaboration between university agents and businesses, collaboration of volunteers, legal advice, increasing financial benefits to create new jobs, and engineering assistance. The study also concludes that it is important for the business incubator to be involved in both the pre-incubation phase and the incubation itself, without neglecting the post-incubation phase [26].

There is great innovation arising from the activity of business incubators [27]. Innovation is the process of integrating existing technology and inventions to create or improve a product or process [28]. Innovation represents a path through which knowledge is transferred and becomes a process, a product or service that incorporates new advantages for the market or society [29]. Innovation is an objective, goal, aspiration, pragmatic reason, value, and commitment to change [30]. The purpose of R&D is to promote the triangle: education, innovation, and research [31].

SMEs pursue innovation for market-related reasons such as meeting customer expectations or being competitive and able to stay in the market [32]. The concept of innovation is linked to the market, as it is considered the process through which intellectual capital creates a new idea that will subsequently be commercialized in a sustainable manner [33].

Innovation is the set of scientific, technological, financial, and commercial activities that allow introducing new or improved products, services, processes, and management techniques in the national or foreign market [34]. The economic dynamism of a region depends on its capacity for innovation, which is sustained by its investment effort in R&D [35].

Access to knowledge and innovation is essential for regional development and competitiveness. In this regard, business incubators become regional development platforms integrated into a regional innovation system that can absorb exogenous knowledge [36] through links with other actors that stimulate economic activity and the local, regional, and national economy [7]. These linkages can strengthen the organization's capacity to engage in open innovation and can be formal (contracts) or informal (history, culture, or trust) [37]. Greater openness to external sources of knowledge favors open innovation and thus innovative performance, as well as facilitating information flows between companies [38].

Given that knowledge-based entrepreneurial companies are the main generators of economic growth, incubators constitute a great support for them [6], and they are an important mediating link between universities and companies [36]. Universities play a fundamental role as generators of knowledge and innovation [36], in addition to the fact that companies incubated in universities yield better results in terms of employment and sales [7]. From the point of view of the perception of incubated companies, resources related to knowledge and culture are highly valued [39].

The establishment of close links with universities enables the employment of students, which is beneficial for both parties [8]. Yet, there are other relationships that can also be beneficial to business, such as collaborating with NGOs (non-governmental organizations) in clarifying the relationship between economic innovation and sustainability [40]. New science, technology, and innovation (STI)-based enterprises can be a key way to achieve Sustainable Development Goals (SDGs). Business incubators can support this process by including SDGs among their specific objectives, developing performance monitoring systems, and coordinating with other actors through networks of information flows through which lessons learned are transferred [41].

Entrepreneurs in Spain are not interested in incorporating the capabilities necessary to face digitalization, either with their own talent or by hiring service companies [42]. Larger companies (especially medium-sized ones) with managers that have university studies carry out greater and more

important innovation in the areas of products, processes, and management [42]. On the other hand, the percentage of SMEs carrying out innovation activities increased during 2017 [43].

There is some work on innovation linked to business development [1], such as a study which points out the positive effect of organizational innovation on company growth based on a sample of 4125 Spanish companies; or a research that concludes the existence of a correlation between competition and innovation, a study of 1347 companies in Chile [44]. Organizational learning capabilities have a positive impact on innovation performance, especially in organizations where knowledge exploitation is the main source of competitive advantage [45].

New business development is not linear, rather, it is prone to interruptions and reversals [46]. Rates of return are non-stationary increasing or decreasing rapidly as a result of an adjustment process [47]. Innovative start-ups are often seen as key drivers of innovation and the creation of new sustainable jobs [48], but due to the dual responsibility of being both new and small, they also face greater obstacles than larger, better-established firms [49]. The advantage of small and young companies is their potential for growth and job creation [50–52].

Currently, there is no reliable evidence on the effectiveness of public policies for high-growth entrepreneurship [53]. It is important, therefore, to understand when public support succeeds in promoting growth [54]. The incubators that have consumed the most resources from public administrations in Galicia between 2009 and 2013 are those that have contributed the most to revenue and are highly profitable socioeconomically in terms of business creation, employment, and sustainability over time [55].

Recent studies link innovation to aspects of competition and business development, but there is a lack of studies directly related to companies that are incubated or located in business incubators. Although there are very recent studies on regional development platforms and their link to scientific innovation, sustainable economic development or the level of satisfaction of incubated companies with the services provided by incubation centers [8,26,36,41], there is thus a need for more empirical research that directly compares overlapping groups of innovative start-ups supported by an incubator with those that did not have this support, allowing for solid conclusions that inform policy on high-growth entrepreneurship [56]. It would be important to identify the most appropriate programs to promote business growth, which is a challenge when assessing the effectiveness of planned policy intervention in this regard [53,57].

3. Objectives and Methodology

There is a great deal of innovation in the activities developed by entrepreneurs located in business incubators [27]. In turn, business incubators are usually integrated into regional innovation systems [36]. On the other hand, there is also a need for empirical research to analyze innovation in companies supported by incubators [56]. Thus, there is an opportunity to identify entrepreneurs who have been in business incubators and classify them according to their degree of innovation as more and less radical. The first objective of this article is to analyze whether companies with a higher degree of innovation have greater business growth and better management data [1].

As business incubators play an essential role in boosting small enterprises [6] and stimulating sustainable economic growth [8], they contribute directly and indirectly to national development [24]. On the other hand, knowledge-based businesses are the main generators of economic growth, and incubators are a great support [6]. Through the “integral model of public resources,” incubators create business initiatives that are sustainable over time, generating sustained wealth through the creation of businesses and jobs [2]. Therefore, the second objective is to analyze whether the training of entrepreneurs with the support of incubators contributes to creating sustainable businesses over time.

The sample taken for this research consists of companies constituted in societies with the obligation to submit annual accounts. For this purpose, the project has been supported by the Spanish Chambers of Commerce, institutions that lead business incubators in Spain [58].

Therefore, and in view of the aim of this article, it is necessary to analyze whether there are significant differences in the results of companies with radical innovation strategies compared to those with less intensity in such innovation that have been in the incubators of the Chambers of Commerce of Spain and to analyze sustainability over time.

The variables used for this study are classified as follows:

- Identification: name of the company, business incubator where it is or was, year of establishment of the company, legal form, Tax Identification Number, years of activity and presentation of accounts, training of the entrepreneurs, type of activity, jobs created.
- Innovation. A questionnaire was prepared to determine the degree of innovation carried out by each company, obtaining two groups: radical innovation (those that have higher values in introducing, experimenting and developing new products/services; greater release frequency, or improving the quality of existing ones) and non-radical innovation companies, (those that have lower values in the items reviewed).
- Economic and management:
 - Balance sheets;
 - Income statement;
 - Variables of profitability, operations, structure, and per employee.

The number of companies that answered the questionnaire, allowing to indicate the degree of innovation, that were within the incubators, amounted to 30, all of which were limited companies, half of which were radical innovation companies.

The techniques used are independent sample statistics applying the Levene's test, averages, balance sheet analysis, income statement analysis, as well as different profitability, operational, and structural ratios.

4. Results and Discussion

4.1. Characterization of the Companies

The companies that answered the survey are located in 17 different incubators that belong to the Spanish Chambers of Commerce. All of them are companies that are required to present their annual accounts to the Commercial Register. In the present study, limited companies predominate (93%) and the entrepreneur, when setting up a company, does so mainly as a limited company (73.2%) [58]. Self-employment cannot be confused with the individual entrepreneur, since self-employment is the social security contribution regime used by employers to make contributions. Employers in limited companies are therefore self-employed, in the same way as individual entrepreneurs. The fact that they set up limited companies is an indicator of sustainability, since setting up as a company entails many more requirements, and when the entrepreneur takes this step, it is because he or she has expectations of sustainability over time. The average age of these companies is 6.7 years, taking as the last date 31/12/2018 (The annual accounts in Spain must be submitted to the company register before 30 June each year, but with COVID-19, the administrative deadlines have been extended until 30 September 2020 for the presentation of the accounts for 2019), while 46.3% of entrepreneurs in Spain cease their activity before the fourth year [59]. In business incubators, the survival rate reaches 90.8% by the fourth year, and those that are constituted as limited companies continue to operate at 100%. Business incubators contribute to business sustainability to a greater extent than the companies that are set up outside the incubator [2].

The classification of companies between the most radical and the least radical innovation is established according to the results obtained by each entrepreneur in the five relevant items listed in Table 1, related to the introduction of new products/services in the market, their development, the frequency of their launch, the experimentation of new products, and the improvement of the quality

of the existing ones. This table shows that the greatest difference lies in the strategy of introducing new products or services into the market, followed by experimentation with new products and the generation of new services. The average difference between both groups is 2.2 points; the maximum value reached by a company was 7 points, the minimum being 2.4 points.

Table 1. Average value of innovation items according to the type of company (The coincidence in the number of companies with a more radical versus less radical strategy responds to the result of the surveys, and in no case corresponds to a median).

Innovation Type	No.	1.Introducing New Products/Services	2.New Generation for Product Development/Services	3.Release Frequency of New Products/Services	4.Experiencing New Products/Services	5.Improvement of Product Quality/Existing Services	Average
More Radical	15	6.07	5.93	5.47	6.00	5.87	5.87
Less Radical	15	3.13	3.67	3.53	3.67	4.64	3.67
Total	30	4.60	4.80	4.50	4.83	5.28	4.77
Differ.		2.93	2.27	1.93	2.33	1.22	2.20

Source: Own elaboration based on business surveys.

Table 2 shows that there is a predominance of entrepreneurs with university education level (83.3%), a figure higher than that previously published, which represented 66.7% [58]. The higher the level of training, the greater the chances of success and sustainability of the entrepreneurial initiative. The fact that the company was constituted as a limited company explains the higher level of training of the entrepreneur, since this type of company entails greater formal obligations, thus requiring the entrepreneur to have higher qualifications. There are no significant differences between the training of entrepreneurs in companies according to whether they have a more or less radical innovation strategy.

Among university entrepreneurs, those in science predominate (64.2%). The hours of training received in business management amounted to 879 on average per entrepreneur, including the regulated training of those who had studied business administration or similar. In addition, it is observed that they have an average experience as an entrepreneur in their sector of 7.75 years, in other management sectors (6.5 years on average), or of 15.26 years as an employee. The experience of the entrepreneur is another factor that influences the sustainability of the business initiatives that are created in business incubators.

Table 2. Training of entrepreneurs according to the degree of innovation.

Entrepreneurs Innovation	% More Radical	% Less Radical
Secondary Education	6.7%	6.7%
Vocational Training	13.3%	6.7%
University Degree	80.0%	86.7%
Total	100.0%	100.0%

Source: Own elaboration based on business surveys.

Table 3 shows how the companies subject to study are mainly dedicated to professional services, although this is more the case for radical companies (73.3%) than for the less radical ones (60%). The ratio is lower than those presented by another work, where it was 82.1% [58].

Table 3. Business activities according to the degree of innovation.

Activity	% More Radical	% Less Radical
Commerce	6.7%	26.7%
Industrial	20.0%	6.7%
Primary		6.7%
Professional services	73.3%	60.0%
Total	100.0%	100.0%

Source: Own elaboration based on business surveys.

An important indicator is the number of workers (including business promoters) per company, with an initial average of 2.63 people working full time, resulting in a 55.9% increase in jobs. Therefore, the average currently amounts to 4.1 people, which shows that these business initiatives encourage job creation and are sustainable over time due to their high business survival rates. According to a previous study, the impact of business incubators on job creation was analyzed in such a way that, in Galicia (Spain), 3498 jobs had been created through these companies [60].

When classifying the companies according to the type of innovative strategy, those with radical innovative strategies create 3.45 jobs on average, compared to 4.79 for those with non-radical strategies. A previous study on companies operating in incubators was carried out, distinguishing between technological and non-technological companies, where annual job creation per incubator and company was practically similar [61].

4.2. Balance Sheet Analysis

Table 4 shows the evolution of the balance sheet of the most radical companies in their innovation strategy for the period 2012–2018. The fact that they have been operating for 7 years shows that the survival rate of the companies that have been in the incubators is high. This is in line with another work where it was said that the mortality rate of the companies that emerged from the incubators was 9.2% [55]. This rate is much lower than that of the companies that did not go through the incubators, which amounts to 46.3%. In general terms, there are no major variations in the value of assets, although it decreases in the years 2013–2015 and increases later in 2018. Rather, there is an inverse evolution between current and non-current assets, in such a way that the latter are reduced, largely due to the fall in the asset value of tangible fixed assets, which is related to the depreciation of the assets and the difficulty of their replacement with the crisis (the expectation of sale decreases and the difficulty of financial disposal increases). On the other hand, current assets increased from 11,158 to 19,872 euros, due to a 159.3% increase in the inventory and a 51.7% increase in current assets.

An analysis of the situation of liabilities and equity reveals a 44.2% reduction in equity, which is largely due to the presence of a continued negative result until 2017, reaching a cumulative negative result of –12,725 euros in 2018, when the share capital is 18,503 euros. Non-current liabilities did not experience major fluctuations, although their evolution was growing (Δ 27.4% m/L debt) in recent years. On the other hand, current liabilities increased every year (Δ 72.6% in the period), reaching the highest value in 2018 with 23,844 euros of debt, highlighting the increase in debt from commercial creditors. This explains why the working capital is negative in all years, evidencing structural financial weakness, with great liquidity tensions and financial management dedicated to the immediacy of the operation.

Table 4. Balance sheet of more radical companies in innovation. Thousands of euros.

Balance	2018	2017	2016	2015	2014	2013	2012
Non-current assets	27,334	27,286	28,543	25,647	26,537	32,155	32,159
Intangible assets	681	1255	1251	912	498	645	853
Tangible fixed assets	23,044	21,994	20,897	20,039	20,538	25,351	28,476
Investments in group companies	245		2010			2046	867
Deferred tax assets	3182	3499	3534	4017	3564	3256	809
Current assets	19,872	14,609	13,807	11,565	8783	6903	11,158
Non-current assets for sale			871	1453	1135		
Inventory	9038	6700	5908	2938	2682	1725	3485
Commercial debtors	8458	5767	5038	3622	3888	3251	6352
Investments in group companies		224	60	43	6		
Accruals	55	45	35	25	5	2	324
Cash	2234	1545	1707	2780	571	1374	698
Assets	47,206	41,895	42,350	37,212	35,320	39,058	43,317
Equity	10,955	10,058	10,617	7411	7692	13,563	20,323
Shareholders' equity	9192	8147	8453	5060	5279	10,281	16,476
Capital	18,503	18,696	18,898	18,898	18,682	18,646	18,643

Table 4. Cont.

Balance	2018	2017	2016	2015	2014	2013	2012
Share premium		190	67	28			
Reserves	694	697	518	573	94	94	91
Shares and holdings in own equity			−34	−35	−20		
Results from previous years	−12,725	−12,740	−14,459	−14,474	−11,399	−4052	−603
Other shareholder contributions	1500	1500	1500				
Financial result	1220	−196	1963	69	−2077	−4407	−1656
Subsidies	1764	1912	2164	2352	2413	3282	3848
Non-current liabilities	12,407	13,677	14,033	17,100	14,247	15,462	9181
Supplies	265						56
Debt	9522	10,041	10,339	10,269	13,213	14,055	7476
Liabilities to group companies	2000	3000	3000	6060			
Deferred tax liabilities	620	635	694	772	1034	1407	1649
Current liabilities	23,844	18,160	17,700	12,701	13,381	10,033	13,814
Liabilities held for sale			817	830	2204		
Short-term debt	5229	5223	4404	4520	4731	4218	9224
Liabilities to group companies	1200	88	237	109		197	.
Commercial creditors	17,416	12,849	12,243	7242	6445	5618	4589
Equity and liabilities	47,206	41,895	42,350	37,212	35,320	39,058	43,318

Source: Own elaboration based on data obtained from SABI (Database on companies in Spain and Portugal).

Table 5 shows that the balance sheet of the less radical companies is an asset value ten times lower than that of the more radical ones. In turn, non-current assets increased to more than double over the years, as a result of the increase in tangible fixed assets, quadrupling. Current assets have remained constant in recent years, which was not the case for the most radical companies. In terms of equity, it can be seen that the equity of less radical companies increases exponentially over the years, and that reserves grow every year. Current liabilities in less radical companies are lower and have grown slightly in the last year. Another differential fact is that in less radical companies the working capital is positive, except for the 2012 balance sheet, which denotes less investment and business diversification.

Table 5. Balance sheet of less radical companies in innovation. Thousands of euros.

Balance	2018	2017	2016	2015	2014	2013	2012
Assets							
Non-current assets	508	494	529	332	264	220	233
Intangible assets	3	7	5	5	2	1	1
Tangible fixed assets	314	270	198	215	226	82	75
Investments in group companies	162	162	225	64			
Financial investments	26	28	86	45	34	118	133
Deferred tax assets	3	27	14	3	1	19	24
Current assets	3928	3961	2314	2235	1515	617	780
Inventory	841	981	307	350	213	162	157
Commercial debtors	2372	2131	1364	1131	720	340	519
Investments in group companies	25	25	3				
Accruals	59	91	1	1	1	1	1
Cash	550	710	553	735	564	111	100
Assets	4437	4455	2842	2567	1779	838	1013
Equity	905	791	655	764	474	57	5
Shareholders' equity	905	791	654	764	474	57	5
Capital	203	256	206	219	193	82	82
Reserves	469	265	245	115	79	42	29
Results from previous years	118	102	19	−88	−252	−109	−99
Other shareholder contributions			1	297	297		
Financial result	114	168	185	221	156	41	−7
Non-current liabilities	255	499	444	257	260	212	135
Debt	255	499	443	256	260	212	135
Current liabilities	3277	3164	1743	1545	1044	569	873
Supplies				177	177		
Debt	837	589	249	161	161	121	291
Commercial creditors	2441	2563	1482	1197	694	436	569
Accruals		13	12	11	12	12	13
Equity and liabilities	4437	4455	2842	2567	1779	838	1013

Source: Own elaboration based on data obtained from SABI.

Table 6 briefly shows the comparative data between both types of companies, where the greatest difference is the size of their balance sheets. The companies with more radical innovation have larger balance sheets with a very high weight of non-current assets (69.7%) compared to only 14.4% of the less radical companies. Liabilities exceed 70% in both types of companies, although there is a greater imbalance in the more radical companies. This stems from the fact that they have few non-current liabilities and assets in relation to the weight of their non-current assets, generating a risk that translates into negative working capital, while the less radical companies have positive working capital despite having current liabilities of 68.1%, but which are lower than current assets (85.6%).

Table 6. Comparison of balance sheets between more and less radical companies in innovation. Average values 2012–2018.

Assets	More Radical Companies		Less Radical Companies	
	Thousands €	%	Thousands €	%
Non-current assets	28,523.0	69.7%	368.6	14.4%
Current assets	12,385.3	30.3%	2192.9	85.6%
Total Assets	40,908.3	100.0%	2561.6	100.0%
Liabilities				
Equity	11,517.0	28.2%	521.6	20.4%
Non-current liabilities	13,729.6	33.6%	294.6	11.5%
Current liabilities	15,661.9	38.3%	1745.0	68.1%
Total equity and liabilities	40,908.4	100.0%	2561.6	100.0%
Working Capital	−3276.6		348.3	

Source: Own elaboration based on data obtained from SABI.

4.3. Analysis of the Income Statement

Table 7 shows the income statement of companies with a more radical innovation strategy. Since 2012–2018 there has been a 40.6% increase in sales, which shows a growing presence in the market. However, supplies grew by 118%, representing more than $\frac{3}{4}$ parts of the number of sales (76.2%), compared to 15% of staff costs. This is indicative of a greater weight of commercial companies in the configuration of the global account, and also increases with the same intensity as sales. In absolute terms, depreciation remained the same, but as the level of activity increased, they represent a proportionally lower value. Another positive aspect is the change in the trend of the operating result from negative in the first years to positive in the last few years, and increasingly so, representing 4.1% of the level of sales when in the first years it was −4.1%. The behavior of the financial result is irregular. All this translates into a positive pre-tax result of 3.1% for 2018, when in 2012 it was negative by −4.4%.

Table 7. Income statement of more radical innovation companies. Thousands of euros.

	2018		2017		2016		2015		2014		2013		2012	
Revenues	53,474	100%	49,179	100%	35,886	100%	31,285	100%	28,443	100%	17,845	100%	38,020	100%
Inventory change	2524	4.7%	1309	2.7%	1159	3.2%	79	0.3%	586	2.1%	−431	−2.4%	−2412	−6.3%
Tasks performed by the company for assets	643	1.2%	1704	3.5%	671	1.9%	673	2.2%	492	1.7%	337	1.9%	281	0.7%
Supplies	−40,739	−76.2%	−39,013	−79.3%	−24,777	−69.0%	−19,603	−62.7%	−18,915	−66.5%	−12,996	−72.8%	−25,654	−67.5%
Other operating revenue	287	0.5%	60	0.1%	241	0.7%	259	0.8%	367	1.3%	70	0.4%	134	0.4%
Personnel expenses	−7950	−14.9%	−7391	−15.0%	−6594	−18.4%	−7916	−25.3%	−7076	−24.9%	−5515	−30.9%	−5748	−15.1%
Other operating expenses	−4207	−7.9%	−4577	−9.3%	−3376	−9.4%	−3436	−11.0%	−3128	−11.0%	−3076	−17.2%	−3687	−9.7%
Depreciation of fixed assets	−2042	−3.8%	−1890	−3.8%	−1930	−5.4%	−1678	−5.4%	−2205	−7.8%	−2806	−15.7%	−3129	−8.2%
Subsidies	202	0.4%	236	0.5%	361	1.0%	365	1.2%	402	1.4%	644	3.6%	652	1.7%
Disposal of fixed assets	4	0.0%	497	1.0%	847	2.4%	1318	4.2%	6	0.0%	42	0.2%	2	0.0%
Other results	22	0.0%	125	0.3%	−93	−0.3%	−12	0.0%	−3	0.0%	−29	−0.2%	−5	0.0%
Operating result	2218	4.1%	238	0.5%	2396	6.7%	1333	4.3%	−1032	−3.6%	−5916	−33.2%	−1546	−4.1%
Financial result	−563	−1.1%	−427	−0.9%	28	0.1%	2263	7.2%	−1279	−4.5%	−934	−5.2%	−835	−2.2%
Pre-tax result	1656	3.1%	−189	−0.4%	2424	6.8%	−930	−3.0%	−2311	−8.1%	−6850	−38.4%	−2382	−6.3%
Income taxes	−436	−0.8%	−7	0.0%	−460	−1.3%	999	3.2%	234	0.8%	2444	13.7%	725	1.9%
Financial result	1220	2.3%	−196	−0.4%	1963	5.5%	69	0.2%	−2077	−7.3%	−4407	−24.7%	−1656	−4.4%

Source: Own elaboration based on data obtained from SABI.

Table 8 presents the income statement of less radical innovation companies. The level of sales increased in the period 2012–2018 by 549%, which is much higher than the increase in sales of radical innovation companies, although the volume of sales for 2018 is 557.3% compared to the less radical

companies. In the less radical companies, it can be seen that the volume of supply expenses is 81.3% in 2018, a volume very similar to that of the most radical companies, 76.2% in the same year. This again shows the maximum presence of commercial companies. Personnel expenses are only 5.1% of total income, a very low ratio compared to more radical companies (14.9%).

The pre-tax result is higher in the non-radicals, always obtaining a profit, except in 2012. One of the justifications for the business incubators is the contribution that the companies that leave the incubator make to society through the payment of taxes, among other socioeconomic benefits [62]. Through the “Integral Model of economic profitability,” it was demonstrated that what was recovered by the public administrations was greater than the investment made in the business incubators, which generate wealth-creating companies. As for our sequence, less radical companies contribute to the tax payment every year of the period (2012–2018), with the exception of the first one, while the radical ones do not, as they give losses.

Table 8. Income statement of less radical innovation companies. Thousands of euros.

	2018		2017		2016		2015		2014		2013		2012	
Revenues	9594	100%	12,738	100%	10,388	100%	9005	100%	4968	100%	1304	100%	1478	100%
Inventory change	-4	0.0%	7	0.1%	0	0.0%	49	0.5%	5	0.1%	49	3.8%	45	3.0%
Supplies	-7798	-81.3%	-9619	-75.5%	-7803	-75.1%	-7154	-79.4%	-3495	-70.4%	-688	-52.8%	-770	-52.1%
Other operating revenue	313	3.3%	16	0.1%	7	0.1%	10	0.1%	17	0.3%	3	0.2%	10	0.7%
Personnel expenses	-494	-5.1%	-820	-6.4%	-831	-8.0%	-652	-7.2%	-619	-12.5%	-372	-28.5%	-545	-36.9%
Other operating expenses	-1545	-16.1%	-2021	-15.9%	-1442	-13.9%	-907	-10.1%	-630	-12.7%	-201	-15.4%	-200	-13.5%
Depreciation of fixed assets	-48	-0.5%	-51	-0.4%	-43	-0.4%	-39	-0.4%	-40	-0.8%	-22	-1.7%	-11	-0.7%
Disposal of fixed assets			3	0.0%	-3	0.0%	-2	0.0%		0.0%	-1	-0.1%		0.0%
Other results	225	2.3%	9	0.1%	8	0.1%	-1	0.0%	16	0.3%	-3	-0.2%		0.0%
Operating result	245	2.6%	261	2.0%	282	2.7%	310	3.4%	222	4.5%	68	5.2%	5	0.3%
Financial result	-87	-0.9%	-41	-0.3%	-10	-0.1%	-35	-0.4%	-29	-0.6%	-15	-1.2%	-10	-0.7%
Pre-tax result	159	1.7%	220	1.7%	272	2.6%	276	3.1%	193	3.9%	53	4.1%	-5	-0.3%
Income taxes	-44	-0.5%	-52	-0.4%	-87	-0.8%	-54	-0.6%	-37	-0.7%	-12	-0.9%	-2	-0.1%
Financial result	114	1.2%	168	1.3%	185	1.8%	221	2.5%	156	3.1%	41	3.1%	-7	-0.5%

Source: Own elaboration based on data obtained from SABI.

By analyzing the main ratios of the income statement and comparing the average data for the period 2012–2018 between companies more and less radical in terms of innovation (Table 9), the following results can be extracted: a higher volume of sales in the former; a very similar percentage in terms of supplies, which are very high in both cases, reflecting the commercial nature of the companies analyzed; a significant difference in terms of personnel expenses, which is 19% in the more radical companies and falls to 8.8% in the less radical ones; a higher percentage of financial expenses in the more radical companies (3.4% of income); the less radical companies are those who contribute most to the state by paying more corporation tax (the most innovative, given their losses, do not contribute).

Table 9. Comparison of balance sheets between more and less radical companies in innovation. Average values 2012–2018.

	More Radical		Less Radical	
	€	%	€	%
Revenues	36,304.57	100%	7067.86	100%
Inventory change	402.00	1.1%	21.57	0.3%
Supplies	-25,956.71	-71.5%	-5332.43	-75.4%
Other operating revenue	203	0.6%	53.71	0.8%
Personnel expenses	-6884.29	-19.0%	-619.00	-8.8%
Other expenditures	-3641.00	-10.0%	-992.29	-14.0%
Amortization	-2240.00	-6.2%	-36.29	-0.5%
Other results	0.71	0.0%	36.29	0.5%
Operating result	-329.86	-0.9%	199.00	2.8%
Financial result	-896.14	-2.5%	-32.43	0%
Pre-tax result	-1226.00	-3.4%	166.86	2%
Taxes on profits	499.86	1.4%	-41.14	-1%
Financial result	-726.29	-2.0%	125.43	2%

Source: Own elaboration based on data obtained from SABI.

4.4. Economic and Financial Ratios

Table 10 contains the main ratios of both more and less radical companies in their innovation strategy. Regarding the profitability ratios of the former, although in the last year it was positive, it has been dragging on a negative evolution since 2012, which gives it negative ratios. Less radical companies present ratios that may be considered good (except in 2012, they have always been positive even though they vary from one year to another).

In the operations section, it should be noted that the inventory ratio of the more radical companies has worsened, rotating less over time, and thus reducing it by almost half. The average collection period is maintained, while the average payment period increases, which implicitly means greater financing from suppliers and creditors. Less radical companies can be considered to have good asset and inventory turnover ratios, which in recent years have rotated once a month. On the other hand, the collection period is longer than the payment period, which is usually the case.

When focusing on the structure ratios in the most radical companies, it can be seen that the solvency ratio is below what is recommended, since it should be over 1.5, and in no year does it reach one unit. These companies present bad ratios in general and worse than the less radical ones whose solvency ratio, although below what is considered standard, is closer to 1.5.

Analyzing the last section of ratios per employee, it is indicated that the profits per professional in the case of the most radical companies are negative, with low operating income per employee, higher average cost of the same and worse working capital ratios than in the less radical companies in innovation.

Table 10. Comparative analysis, financial ratios of more versus less radical companies.

Financial Ratios	More Radical	Less Radical
Profitability/own resources (%)	−9.82	30.88
Profitability/capital employed (%)	−0.63	22.94
Profitability/total assets (%)	−3.33	6.50
Profit margin (%)	−6.57	2.41
Operations		
Net asset turnover	1.48	8.43
Interest hedging ratio	−0.21	5.34
Inventory turnover	8.77	12.21
Collection period (days)	52	73
Credit period (days)	73	53
Structure		
Solvency ratio	0.78	1.24
Liquidity ratio	0.51	1.00
Financial autonomy ratios	0.92	1.15
Solvency coefficient (%)	27.95	17.85
Leverage (%)	172.11	676.05
Per employee		
Benefit/employee	−8	5
Operating income/employee	174	209
Labor costs/operating revenue (%)	20.54	18.09
Average cost/employees	34	29
Own resources/employee	65	19
Working capital/employee	15	35
Total assets/employee	208	103

Source: Own elaboration based on data obtained from SABI.

Appendices A and B contain a comparison of the latest company accounts presented in the commercial register, their main ratios and determines whether there are significant differences between more radical companies in terms of innovation strategy and the less radical ones. For this purpose, the Levene's test was applied to carry out a comparison of averages between both groups. No significant differences were observed in any ratio of the balance sheet, the income statement,

or in the economic ratios since the bilateral sig is always clearly less than 0.05. This indicates that, although differences can be found in the measures due to the size of some of the companies, it cannot be concluded that this derives from belonging to the group of companies with more radical or less radical commercial strategies.

5. Conclusions

Business incubators are unquestionable instruments for the creation of companies with many years of experience and major international presence. In Europe, and specifically in Spain, they are largely financed by public funds, as their profitability is economic and social. Their main outputs are the creation of companies with high survival rates, which make them sustainable over time, generating stable employment, and constantly contributing to the collection of public revenue, in addition to other economic and social benefits that stimulate growth and development.

Business incubators have evolved away from a mere cession of space to the entrepreneur and providing services linked to training, management, innovation, for a limited time, as they are public aid programs.

The main objectives of this study focus on whether innovation in companies located in incubators has a positive influence on business growth [1] and whether the training of entrepreneurs with the help of incubators contributes to creating companies with high survival rates [2].

Among the corporate companies that have answered the questionnaires, half can be classified as radical companies in their innovation strategy with an average of 5.87 in all their items and the other half as not very radical, with an average value of 3.67. These companies are job generators, with an average of 4.1 people per company. The creation of qualified employment in companies that are sustained over time is one of the facts that contribute to the economic and social profitability of business incubators. There are differences in the balance sheets of companies with more radical innovation strategies as opposed to less radical ones. The former are larger, have less working capital, and are more likely to face short-term obligations. On the other hand, the higher turnover of the more radical companies does not translate into positive income statements, nor have they grown more in sales for the period 2012–2018. In contrast, the less radical ones sell less, grow more, and present a positive result for that period; nor are the main ratios of profitability, asset turnover, inventory, solvency, liquidity or profitability per employee better in companies with stronger innovative strategies. However, even though in general better ratios are found in the latter companies than in the former, the comparison of averages with independent samples applying the Levene's test does not show that the differences are significant due to the intensity of the innovation strategy. Therefore, the results obtained do not confirm, but neither do they contradict, the link of innovation with company growth and higher profitability [1]. This could be explained by the fact that there is a lot of innovation in entrepreneurs located in business incubators [27], and therefore there are no differences according to the degree of innovation.

Entrepreneurs in business incubators generate an average of 4.1 jobs per company. In addition, the survival rate of the companies that answered the questionnaire in the seventh year was 100%, while 46.3% of entrepreneurs in Spain ceased their activity before the fourth year. Therefore, we conclude that qualified employment is created in companies that are sustained over time, which is one of the facts that contribute to economic growth and social welfare [2,6,8,24].

This study concludes that, from the selected sample, 83.3% of the entrepreneurs established in business incubators in Spain have university training and 64.2% lean toward the branches of science, which favors the survival of businesses and the creation of qualified employment. All this favors the sustainability of the productive and business model which, being more intensive in knowledge and R&D, becomes more competitive in the market. Therefore, taking into account the importance of knowledge for economic growth [6] and the fact that the entrepreneur is the main person responsible for business success [25], the importance of entrepreneurial training becomes evident, which has a positive effect on the survival of companies.

As a final conclusion, it can be said that business incubators generate profitable companies that are sustainable over time, having entrepreneurs with extensive experience in management and high qualifications. This generates quality and lasting employment [2]. However, there is no evidence of significant differences between the more or less innovative nature of companies.

The limitations found in this article have been the sample size, since only thirty companies had presented their annual accounts in the Commercial Register and had answered the questionnaire that allowed for the classification according to their degree of innovation. Considering that the value of the research lies in the importance of studies on the relationship between innovation, training, and wealth-generating sustainability in business incubators in the current knowledge economy, it would be appropriate to study whether the conclusions of this study are fulfilled in other countries and to carry out comparative analyses in order to check their applicability in a general context.

Finally, in line with the idea that STI may be a key way to achieve the SDGs [41], a possible future line of research could focus on how the inclusion of SDGs interferes with the survival and sustainability of companies as well as their profitability and whether there is added value in including SDGs.

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Appendix A

Table A1. Comparison of independent sample averages (companies with more radical and less radical strategies) of different management ratios applying the Levene's test, year 2018.

Concept	Company	N	Mean	Standard Deviation	Standard Error of the Mean
Fixed assets	Less radical	15	42,090.87	87,936.33	22,705.06
	More radical	15	1,910,535.00	7,009,391.94	1,809,817.22
Current assets	Less radical	15	312,596.47	662,145.46	170,965.22
	More radical	15	1,387,898.27	5,103,428.16	1,317,699.49
Total Assets	Less radical	15	354,687.40	677,771.96	174,999.97
	More radical	15	3,298,433.00	12,112,310.54	3,127,385.13
Shareholders' equity	Less radical	15	75,555.00	111,467.34	28,780.74
	More radical	15	770,403.33	2,814,979.14	726,824.49
Fixed liabilities	Less radical	7	54,210.71	82,824.55	31,304.74
	More radical	10	1,340,485.70	3,871,580.16	1,224,301.14
Liquid liabilities	Less radical	15	253,834.27	649,407.14	167,676.20
	More radical	15	1,634,372.73	6,127,857.92	1,582,206.11
Revenues	Less radical	15	727,214.27	1,406,598.00	363,182.04
	More radical	14	3,902,728.07	14,340,546.99	3,832,672.40
Results	Less radical	15	5252.93	31,264.18	8072.38
	More radical	15	79,756.07	315,758.66	81,528.53
Cash Flow	Less radical	15	9,533.60	35,069.38	9054.88
	More radical	15	228,314.13	837,275.79	216,183.68
Return on equity	Less radical	15	-74.13	632.68	163.36
	More radical	15	11.85	88.27	22.79
Net asset turnover	Less radical	15	52.01	165.95	42.85
	More radical	15	0.38	4.25	1.10
Solvency ratio	Less radical	15	1.58	0.83	0.21
	More radical	15	1.76	1.80	0.47
Benefit employee	Less radical	12	2.17	21.85	6.31
	More radical	10	0.40	12.68	4.01

Appendix B

Table A2. Comparison of independent sample averages (companies with more radical and less radical strategies) of different management ratios applying the Levene's test, year 2018.

		Levene's Test of Equality of Variance		t-Test for Equality of Means	
		F	Sig.	Sig. (bilateral)	Difference in Means
Fixed assets	Equal variances assumed	4.507	0.043	0.311	-1,868,444.1333
	Equal variances not assumed			0.319	-1,868,444.1333
Current_assets	Equal variances assumed	3.419	0.075	0.425	-1,075,301.8000
	Equal variances not assumed			0.431	-1,075,301.8000
Total_assets	Equal variances assumed	4.055	0.054	0.355	-2,943,745.6000
	Equal variances not assumed			0.363	-2,943,745.6000
Shareholders'_equity	Equal variances assumed	4.025	0.055	0.348	-694,848.3333
	Equal variances not assumed			0.356	-694,848.3333
Fixed_liabilities	Equal variances assumed	3.301	0.089	0.398	-1,286,274.9857
	Equal variances not assumed			0.321	-1,286,274.9857
Liquid_liabilities	Equal variances assumed	3.669	0.066	0.393	-1,380,538.4667
	Equal variances not assumed			0.400	-1,380,538.4667
Revenues	Equal variances assumed	3.905	0.058	0.400	-3,175,513.8048
	Equal variances not assumed			0.424	-3,175,513.8048
Results	Equal variances assumed	3.340	0.078	0.371	-74,503.1333
	Equal variances not assumed			0.378	-74,503.1333
Cash_Flow	Equal variances assumed	4.066	0.053	0.321	-218,780.5333
	Equal variances not assumed			0.329	-218,780.5333
Return_on_equity	Equal variances assumed	2.911	0.099	0.606	-85.9800
	Equal variances not assumed			0.610	-85.9800
Net_asset_turnover	Equal variances assumed	4.314	0.047	0.238	51.6300
	Equal variances not assumed			0.248	51.6300
Solvency_ratio	Equal variances assumed	4.756	0.038	0.724	-0.1827
	Equal variances not assumed			0.725	-0.1827
Benefit_employee	Equal variances assumed	1.650	0.214	0.824	1.7667
	Equal variances not assumed			0.816	1.7667

Source: own elaboration.

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