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**NEW TENANTS IN SCIENCE AND TECHNOLOGY
PARKS: A NEW GENERATION OF INNOVATIVE
ENTREPRENEURS**

Plenary Session 5 :
Managing the global dimension

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NEW TENANTS IN SCIENCE AND TECHNOLOGY PARKS: A NEW GENERATION OF INNOVATIVE ENTREPRENEURS

Executive summary:

Now more than ever, customers' needs are constantly changing and in the case of Science and Technology Parks (STPs) the situation is the same. For that reason, the services of STPs have to be adapted to new entrepreneurs' demands. They have to improve and develop new infrastructures and value added services to prevent their customers from relocating.

The main purpose of our report is to analyze the new business models that are developing in the Spanish science and technology parks and how these parks are adapting their services to hold or attract these new kinds of entrepreneurs.

INTRODUCTION:

An African proverb says: "If you want to go fast, walk alone, if you want to go far, walk in groups". In this sense, Science and Technology Parks provide to entrepreneurs the necessary support on the way to success.

However, the globalization of markets and the faster development of ICT technologies have promoted a new kind of business with different needs from the traditional companies.

According to Felipe Romera, president of the Association of Science and Technology Parks of Spain (APTE), we are living IN a second wave of innovation where the companies have different problems with different ways to solve them. If in the first wave of innovation, companies were interested in the innovation of services and products, in this new wave, they are also seeking talent, productivity and globalization.

Authors such as Sthephen R. Covey (The 7 Habits of Highly Effective People) or online platforms such as The innovators'DNA explain that new entrepreneurs have similar behaviour or habits. However, through this paper, we also are going to show you how their business models are.

METHODOLOGY:

To develop this report, APTE has designed two different surveys: one to analyse the main characteristics of Spanish STPs' tenants' new business models and another one regarding the services and infrastructures of the Spanish STPs towards these companies. Nevertheless, we knew that the first round of research could prove difficult and for this reason, to refine the search, we have collected information about companies with specific characteristics:

- Companies set up in the last 10 years.
- Companies that sell their products and/or services on international markets.
- Prominent businesses that offer innovative products or services, or that introduce changes into the traditional management and marketing models, according to the definition of innovation from the Oslo Manual.

Regarding the second survey, we sent a questionnaire to our 49 operative science and technology park members and also we asked them a selection of their most innovative companies based on the criteria outlined above and then they sent us 44 companies.

Finally, we have collected the response of 53% of surveyed science and technology parks and 43% of surveyed companies.

ANALYSIS OF SURVEY RESULTS

Characterization of new business models in the Spanish STPs:

The surveyed companies were the following:

COMPANY NAME	LOCATION	SECTOR
Sofistic Telematic Security SL	ESPAITEC, PARC CIENTÍFIC TECNOLÒGIC I EMPRESARIAL DE LA UNIVERSITAT JAUME I	TIC
CIMAB	PARC DE RECERCA UAB	Biotechnology
Artificial Intelligence Technologies S.L.	PARC DE RECERCA UAB	TIC
Habitissimo	PARCBIT	ICT

Iberocons, S.A.	PARQUE CIENTIFICO TECNOLOGICO DE ALMERIA (PITA)	Agrifood
Zayin Technology, S.L.	PARQUE CIENTIFICO TECNOLOGICO DE ALMERIA (PITA)	Agrifood
BIORIZON BIOTECH S.L.	PARQUE CIENTIFICO TECNOLOGICO DE ALMERIA (PITA)	Biotechnology
LABORATORIO ANALÍTICO BIOCLÍNICO	PARQUE CIENTIFICO TECNOLOGICO DE ALMERIA (PITA)	Services
ASÍ Ingeniería S.L	PARQUE CIENTÍFICO TECNOLÓGICO DE GIJÓN	Engineering
MBA INCORPORADO, S.L.	PARQUE CIENTÍFICO TECNOLÓGICO DE GIJÓN	Health
WEARABLE TECHNOLOGIES SL	PARQUE CIENTÍFICO TECNOLÓGICO DE GIJÓN	TIC
i2Factory	PARQUE CIENTÍFICO TECNOLÓGICO DE HUELVA	TIC
Detrinca Internet S.L.	PARQUE CIENTÍFICO Y DE LA INNOVACIÓN TECNOCAMBUS	ICT
Innoget	PARQUE CIENTÍFICO Y DE LA INNOVACIÓN TECNOCAMBUS	Technology transfer service
Wellness Telecom S.L.	PARQUE CIENTÍFICO Y TECNOLÓGICO CARTUJA 93	TIC
BIOORGANIC RESEARCH AND SERVICES	PARQUE TECNOLÓGICO AGROINDUSTRIAL DE JEREZ	Biotechnology
Métrica6 Ingeniería y Desarrollos S.L.	PARQUE TECNOLÓGICO DE ANDALUCÍA	R&D services
BRAIN DYNAMICS	PARQUE TECNOLÓGICO DE ANDALUCÍA	TIC
ISEND SA	PARQUE TECNOLÓGICO DE BOECILLO	Services

General characteristics:

63% of surveyed companies have between 6 and 49 employees and about 50% have between 1 and 5 employees dedicated to research and development (R&D) activities.

The main sectors are ICT and Agri-food and Biotechnology and almost half of them have a range of turnover of 100.000 to 1.000.000 €.

Regarding managing teams, in 68% of cases, the business idea was developed by a group of entrepreneurs composed by less than 5 people with a high level of education (63% with a Master's degree). Also, the majority of these entrepreneurs' fields of study are ICT, Business administration and engineering with an age range not exceeding 40 years old in 74% of cases.

What does your company sell?

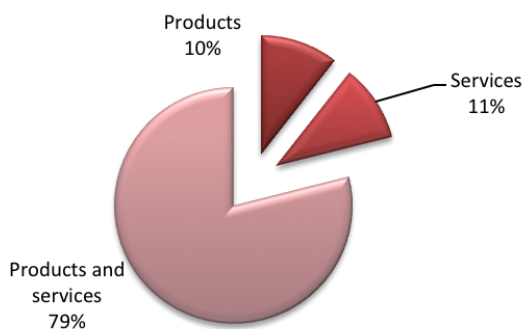


Figure 1

As we can see in Figure 1, the core business is selling products and services and in all cases the main innovation component is in the product or services, not in other aspects such as process or organisation.

Internationalization:

58% of the polled companies are operating mainly in Europe, Latin America and North Africa and 42% have offices or facilities in these geographic zones.

In 47% of cases, the international market represents more than 26% of total turnover.

When do you start your internationalization?

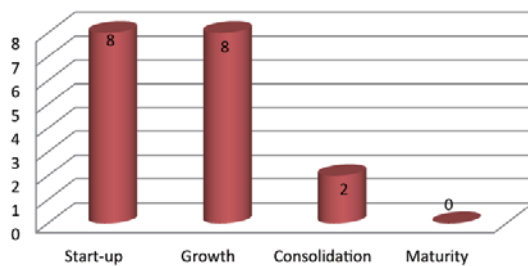


Figure 2

They began their international process in the start – up or growth phase. It means that these companies are born with an international vocation.

Financing:

In 84% of cases, funding was a key factor to set up their business, mainly in the start-up and growth phases. Only in 16% of cases, the origin of funding was 100% private.

Sources of funding

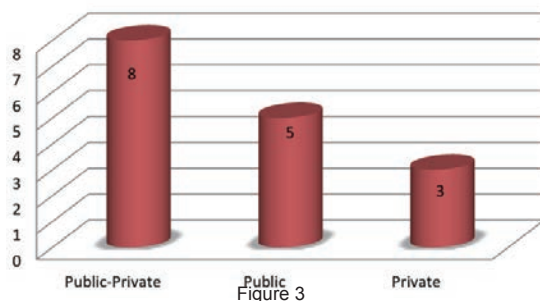


Figure 3

The most interesting STPs services for these companies:

Most STP's services used by these companies are the following ones:

- Incubation
- Contest/programs for entrepreneurs
- Training in cross competences (workshops)
- Workshops about funding sources
- Funding programs managed by STPs
- Workshops about internationalization
- Collaboration with Universities/ Research groups
- Newsletters
- Events organisation

But the three most valued services are: Events organisation, internationalization and newsletter services as is demonstrated in the following figure.

In 79% of the cases, the surveyed companies collaborate with other entities located in the STP and they choose the STP as place to location due the following reasons:

- Strategic place
- Image
- Relation with other companies
- Funding sources

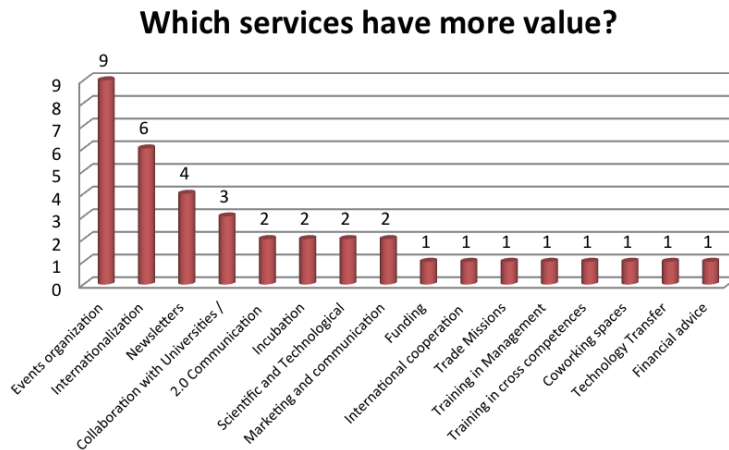


Figure 4

Do you think that the model of science and technology Parks covers the needs of new business models?



Figure 5

First and foremost, 68% of surveyed companies think the STPs cover the needs of new business models. This is due to different reasons for example STPs are a unique and powerful space with a strong union of companies and also they stimulate relationships with Universities. Also, they have a wide range of infrastructures, facilities and services focused on supporting and promoting business innovation in every growth phase and they encourage cooperation with other innovation agents across the region. All of these factors are fostering new business opportunities and attracting high professional profiles (new talent) which are key ingredients to the development of new business models.

New and innovative services in science and technology parks

To analyse the services that STPs offer to their new tenants and companies we have focused the present study on 6 main areas: new models of location in STPs, human resources and training services, funding services, internationalization, technology transfer and intellectual property and marketing and communication services.

New models of localization in STPs

Asking the managing entities of the operative STP members of APTE about the new services they provide to entities and entrepreneurs to install their offices of companies inside the STPs, the biggest percentage confirm the following services as the most common to be offered:

- Coworking spaces (96%)
- Incubation (86%)
- Contest / Programs for entrepreneurs (75%)
- Virtual hosting (50%)
- Preincubation (46%)

Business landing and business acceleration are mentioned but in a small percentage.

Analysing the results we can affirm that managing bodies of Spanish STPs have made an effort in the last years to offer new ways of installation in their parks to the new companies and entrepreneurs. This was done according to the new needs which are more focused on collaboration spaces and receiving the support of other entities (the park, public entities that support innovation programs, European programs, etc.).

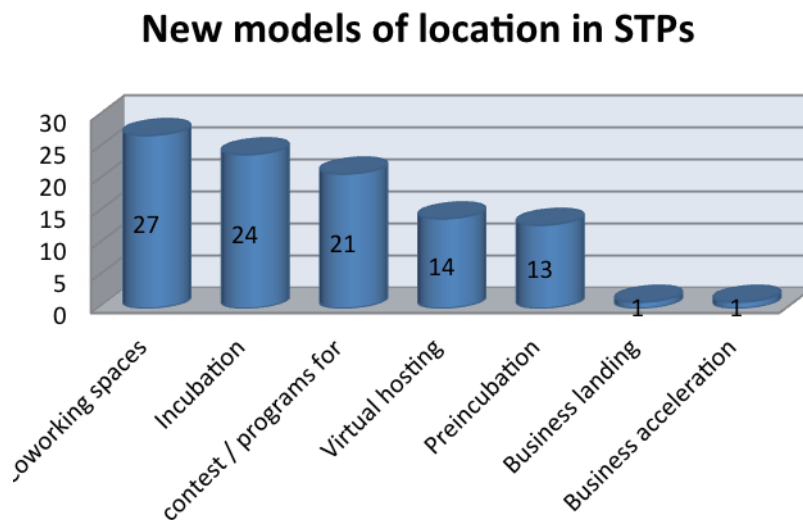


Figure 6

On the other hand, we found that the entrepreneurs and new entities that replied to our survey have used most of these services that STPs offer, in different percentages:

- Incubation (47%)
- Contest / Programs for entrepreneurs (42%)
- Preincubation, virtual hosting and coworking spaces (21%)

According to the data, companies and entrepreneurs have used “incubation” services in their park as the main services of localization, followed by “contest and programs for entrepreneurs”. Both services help the new companies to better manage their business and promote what they are producing (products, services,

etc.).

The main difference between both surveys is about coworking spaces. While a big percentage of STPs are offering this service, only 12.1% of new tenants have used it for their business.

New models of location in STPs

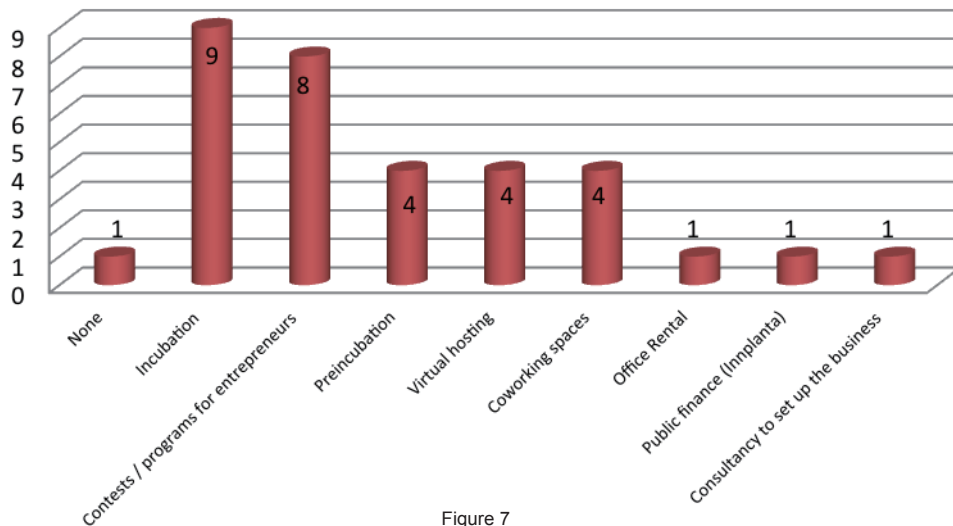


Figure 7

Human resources and training services

In the area of human resources and training services, Spanish STPs offer a variety of solutions. They are focused on improving the skills that entrepreneurs and business manager have to become more successful and competitive. Some ways of doing this is by organising workshops in specific issues related with internationalization including energy sector, agrifood, smart cities and innovation and management; specific training in business models, and last but no least the promotion of employment, through job listings and promoting the collaboration with public entities in employment programs.

From these services provided by STPs, the most common we can find in the parks are:

- Training in cross competences (workshop) (89%)
- Training in management (57%)
- Training in International Markets and Job listings (32% both)
- Collaboration with public employment programs (18%)

General workshops are the most common to be organised in STPs, followed by business management and international markets. The area of promotion of employment achieves 20.5%.

The innovative companies and entrepreneurs located in Spanish STPs generally use these kinds of services to improve their skills and also to recruit potential employees.

The most widely used service, well above the rest is the training in cross competences, where 63% of

Human resources and training services

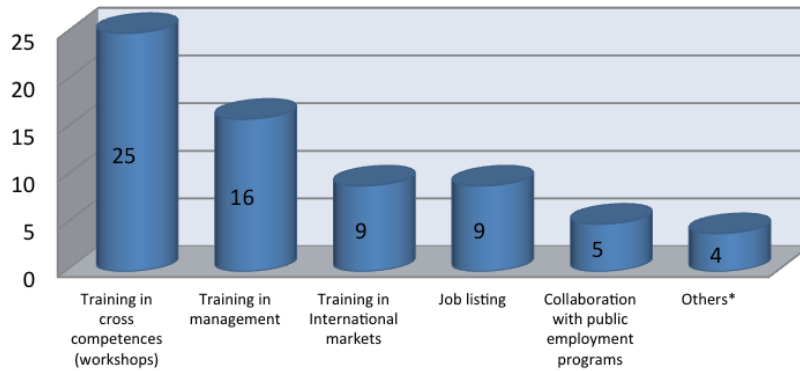


Figure 8

companies have used at least once. Training in management and collaboration with public employment programs comes next in terms of use at 31%. Job listings come third at 12.9%. Training in International markets is used by 21% of the companies that replied to the survey.

Human Resources and training services

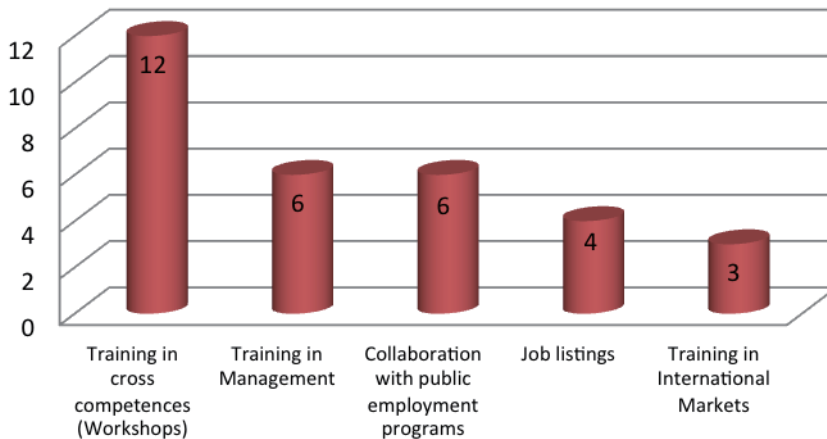


Figure 9

Funding services

About funding services we have to say that Spanish STPs have increased the services to their companies providing a variety of possibilities addressed to small and bigger entities, new consolidated and international business projects, such as contact with investors' networks, workshops, financial advice, crowdfunding or funding programs managed by the parks themselves.

Once again, the most service provided for the majority of Spanish STPs is the organisation of workshops about funding resources, that 96% of the parks provide to their tenants. This service is followed by:

- Contact with investors' networks (64%)
- Financial advice (39%)
- Funding programs managed by science and technology parks (21%)
- Crowdfunding programs (7%)

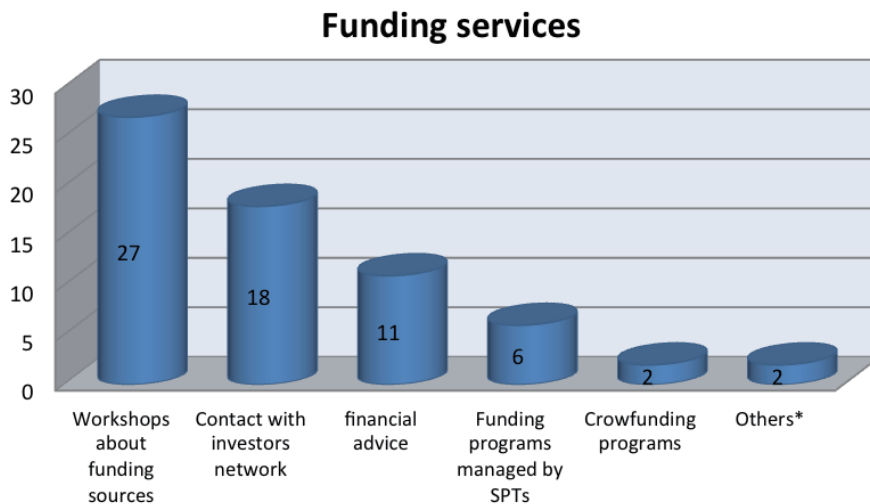


Figure 10

Most of the innovative companies and entrepreneurs that replied to the survey confirm that they use the funding services offered by STPs. Only 10% have not asked for these kinds of services until now.

More than a half, 58%, has attended conferences and workshops about different funding sources organised by the managing bodies of the STPs.

The second service most consumed by these kind of entities in STPs has been the funding programs managed by science and technology parks, that is, programs started by the managing bodies of the parks, often in collaboration with other entities, to develop and promote innovative companies, through financial support, be it for a product, a project or the implementation of a new service or idea. 37% of the companies surveyed have applied for or participated in one of these programs.

31% of the innovative companies also participated in events and meetings to contact investors' networks, through the managing bodies of the STPs. Investors' networks in Spain have increased considerably in recent years and have become an actual "formula" to finance business projects. Most are private entities, but there are also public investment companies such as Invest in Spain. Investors' networks have helped the entry of foreign investors into the country.

Financial advice is another service provided by STPs to their companies that 21% have used. Also 5% of innovative entities and entrepreneurs have participated in crowdfunding programs with the advice or support of the STP where they are located.

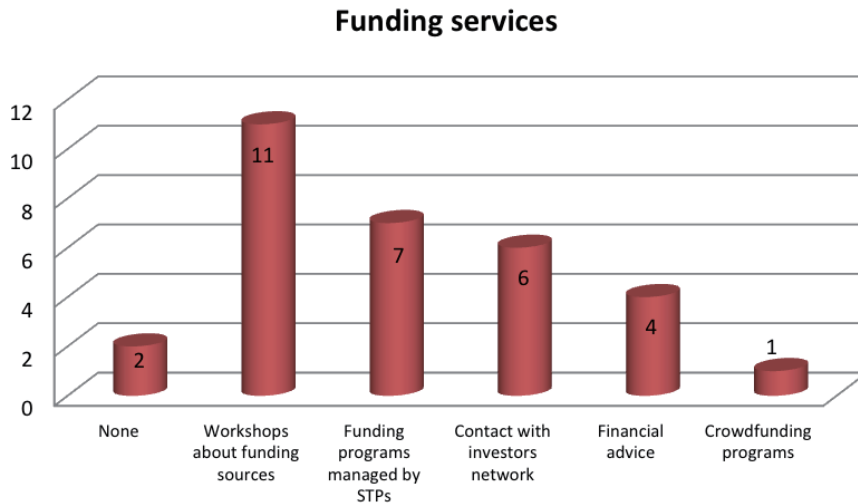


Figure 11

Internationalization

Internationalization of companies is one of the most important strategies of economy and productivity of the 21st Century, and most of Spanish STPs have adjusted and increased their services to adapt themselves to this reality, changing their services to facilitate the arrival of international companies to their locations, and at the very least, promoting the participation of their companies in foreign markets.

From this point of view, all STPs surveyed are organising workshops and events about international programs for their companies. 53% organises trade missions abroad, to visit companies, developing countries or to attend international sectorial events. 50% of Spanish STPs also collaborates at an international level, with international organisations, whether they are STPs, public entities or networking event organizer for networking. Also 25% of STPs have introduced growth programs to optimize and improve the arrival of their companies to international markets.

Spanish STPs have also introduced another service address to international companies, the softlanding, to facilitate their installation in parks. 25% of STPs have this service available for international companies.

On the other hand, when we asked the innovative companies and entrepreneurs about the international services they have used through the parks, we found that 31% of companies still have not make used of them, that's means a third companies have not made use of these services.

The service most used in the area of internationalization has been the participation in workshops and events about international programs, where 58% have used at least once.

In second place, 16% of companies have participated in trade mission. Also 10% are involved in process of international cooperation through the managing body of the parks.

Internationalization

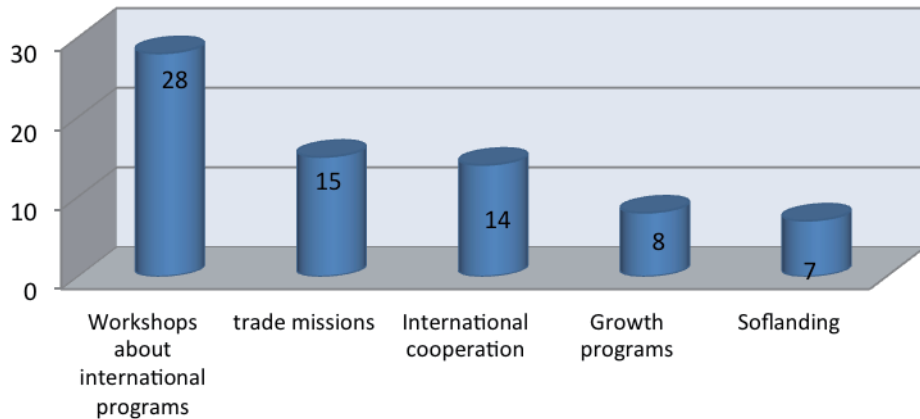


Figure 12

Internationalization



Figure 13

Technology transfer:

Regarding technology transfer services, most Spanish STPs provide their customers with services relating to technology transfer events and collaboration Universities/research groups. However, most polled companies prefer collaboration with Universities/research groups' service instead of technology transfer events service which is demanded only in a 26% of cases,

Other important service provided by Spanish STPs as intellectual property, that is provided by 50% of STPs, is only used by 21% of surveyed companies.

Also, 21% of polled companies do not use any technology transfer service.

Technology Transfer Services

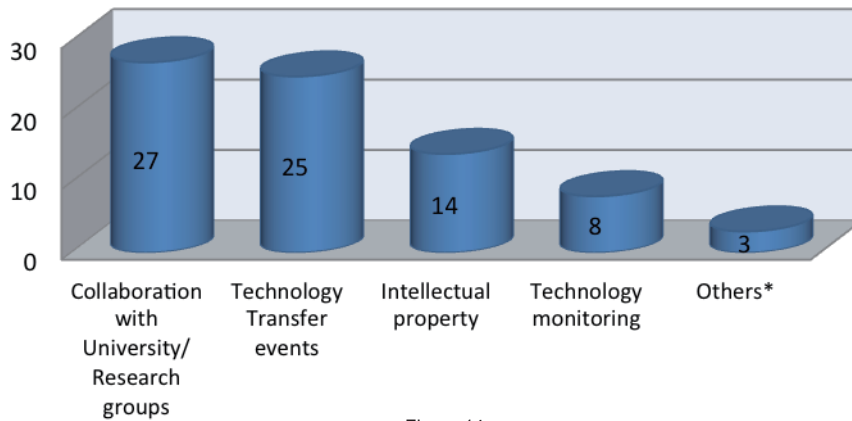


Figure 14

Technology Transfer and Intellectual Property services

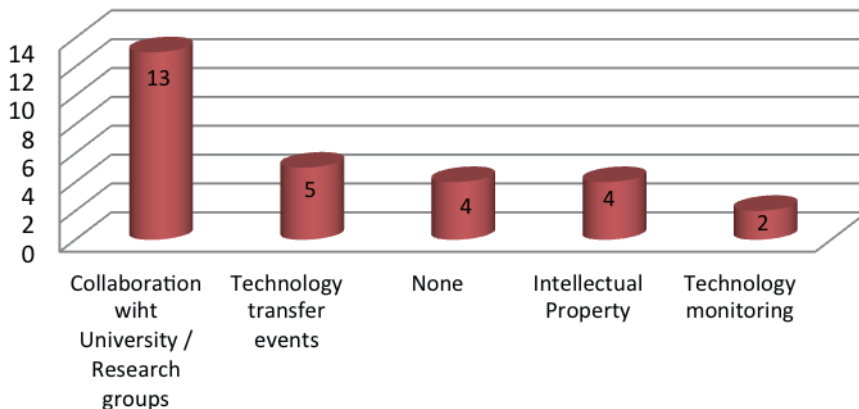


Figure 15

Marketing and communication:

With the deployment of social and digital tools of communication, STPs have begun to use them to disseminate the most important information between their companies. Nevertheless, nowadays, only 61% of Spanish STPs provide information through 2.0 communications. Moreover, only 21% of polled companies use 2.0 communications provide by STPs.

The most used marketing and communication services between surveyed companies is newsletters (47% of cases) followed by events organisation (42%).

However, 21% of surveyed companies do not use any kind of services of marketing and communication provided by STPs.

Other services as international promotion and science and technology dissemination are only demanded by 16% of polled companies.

Communication and marketing services

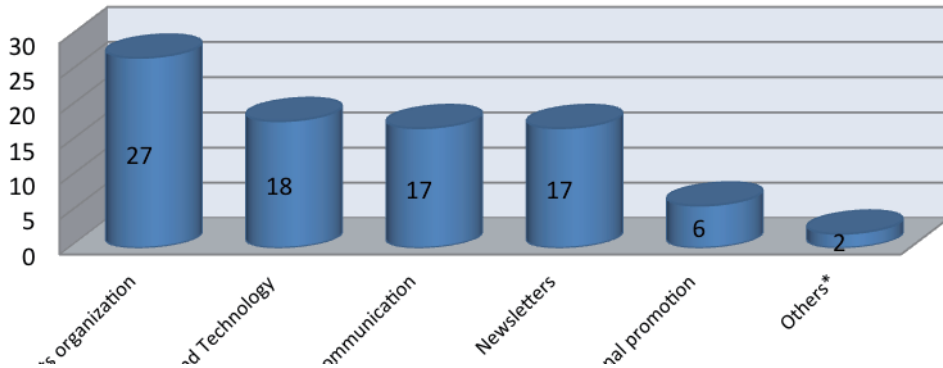


Figure 16

Communication and marketing services

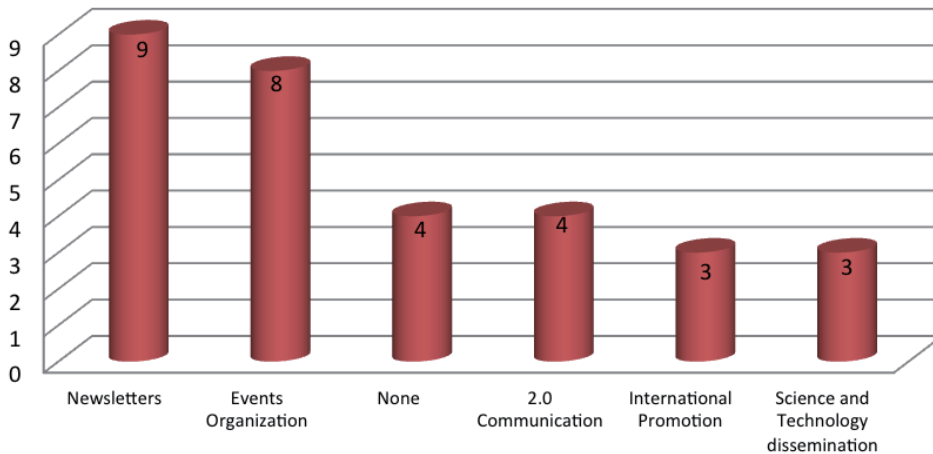


Figure 17

Adapting science and technology parks services to new business models and innovative entrepreneurs

An important part of our survey is knowing if Spanish STPs are taking into account these new business models in order to attract them to their facilities and cover the new needs that these kinds of entrepreneurs may have.

The first step is to know if the STPs are aware of the presence of these new businesses and if they are customizing their services and including them in their strategies when parks develop their action plans.

If we look at figure 18, it is demonstrated that most of the STPs (82%) include the presence of these

companies when designing their strategies. This is important because at the very least we can say that they are aware of including these types of organizations in their planning. Later on, we will consider the point of view of companies to analyze the success of making their services' adaptation.

After this question, to all the parks that answer affirmatively, meaning that they take into account these entities, we asked them to mention the objectives included in their plans oriented to that business. Of all the answers we will highlight the following:

- Business incubators.
- Entrepreneurships programs:
 - To promote the talent and the scientific research.
 - To increase and foster creativity.
- Urban living labs for the development of new products and services.
- Business accelerators.
- International promotion.
- Special focus in key sectors.
- Increase the ways of connection between parks and companies.
 - Virtual link to the park.
 - Coworking spaces.
- Customization of services adapted to each client.
- Search for new funding sources.
- Increase technology transfer.
 - Business – University collaboration.
 - Development of new collaboration programs and projects.
- Attraction of foreign companies.

We also wanted to know if parks have special activities to foster the creation of these new companies. In this case, just 50% of the surveyed parks answered in an affirmative way.

To those STPs which have specific activities to this target group, we asked them a brief explanation of those programs. Some of those programs were mentioned before when we analysed the strategies of parks to this specific client. To sum up these were the main answers:

- Entrepreneurships programs:
 - To promote talent and scientific research.
 - To increase and foster creativity.
 - Collaboration programs with the university, offering the park infrastructure to provide accommodation for the new companies.
- Economic incentives to promote the technology-based entrepreneurship.

Are STPs taking into account the new business models companies in the design of their strategy?

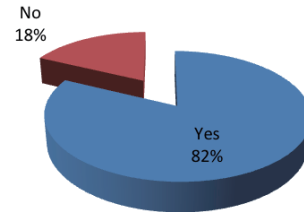


Figure 18

Do you have an special program to foster new business models?

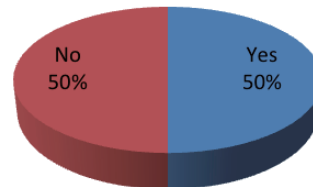


Figure 19

- Collaboration with business incubators.
- Business accelerators:
 - Mentoring programs.
 - Comprehensive advice.
 - Investment forums.
- Events organised by the park:
 - Brokerage events, technology forums...
- Integration of parks in the University building a building inside of campus to foster the link between talent and business. The companies located in these kinds of buildings have to have specific collaboration projects with the University.

As we see, the Spanish STPs are taking care of this specific target group. Now, the question that remains is: "Is this a win-win situation for both the STPs and the businesses within them?"

Is it a mutually beneficial situation?

First, talking about STPs, it has been shown that they care about these types of clients so we asked them what are the main benefits of hosting these businesses in their facilities.

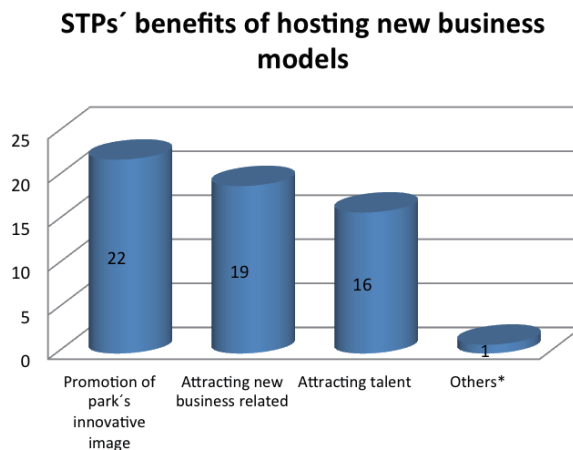


Figure 20

The main benefits for parks are the promotion of park's innovative image (79%), attraction of these new businesses (68%) and the possibility of attracting and retaining the talent (57%). Also, one of the parks added that one of the most important benefits is the exploitation of synergies and the collaborative environment created around this target group.

On the side of companies, they highlighted the following benefits:

- Entrepreneurial ecosystem
- The involvement of the administration to increase and strengthen the development of the business network.
- The infrastructure of parks:
 - ICT infrastructure.
 - Diversity in the ways to connect the companies to the park: Customized offices, coworking spaces, virtual...
 - Transport infrastructure.

- Collaboration with universities.
- Brand identity thanks to links the organization has to the park.
- Services:
 - Consultancy.
 - Events organisation.

It seems that there is a Win-Win relationship between these two organisations.

In the next section, the process and methodologies for designing these new services will be discussed.

How to design new services? Difficulties for STPs

As we can see in the figure 21, the main sources of information for the design of new services are the following:

The 71% of the polled parks create new services collecting directly the suggestions and demands received from companies located in their environment. The 50% of them use the services that other parks are offering to their business and approximately a third of them (32%) are doing market research to find new services.

Other sources of information to design new services mentioned by parks were sectorial innovation challenges, detection of company needs and trend analysis.

Methodology to design new services

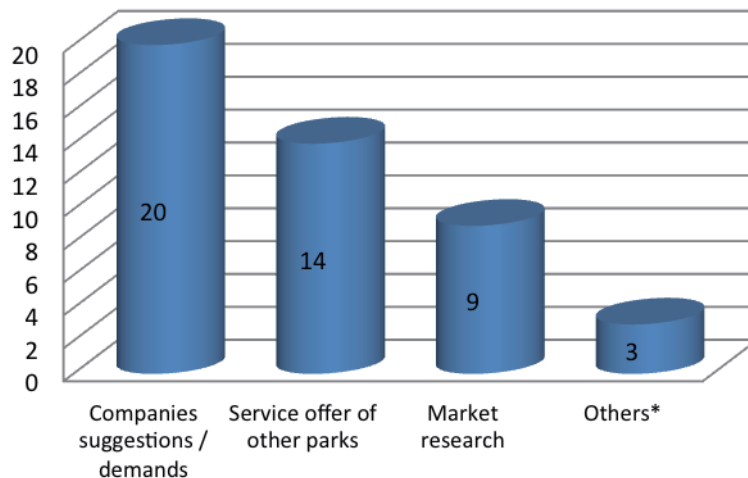


Figure 21

Sometimes is not easy to fulfill the needs of these new entrepreneurs and in APTE we would like to know what are the main problems that our parks have to face in related to this issue. We will see them in the following figure:

Barriers to develop new services

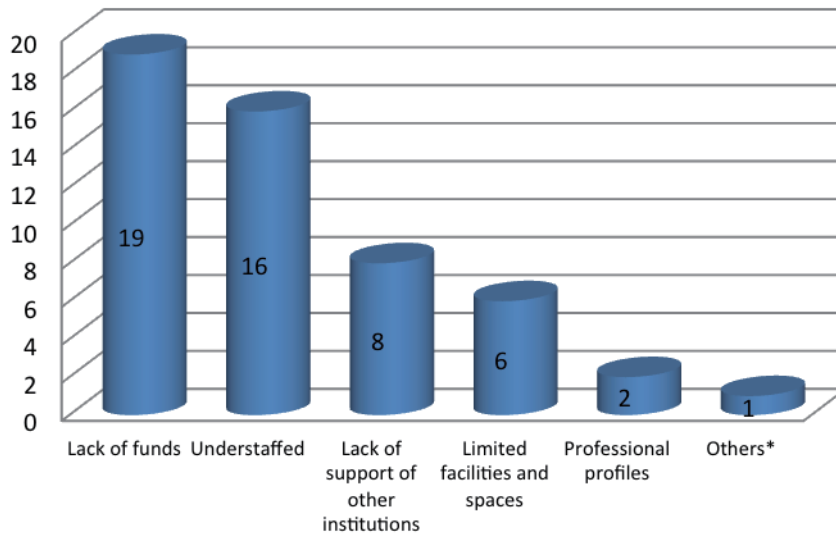


Figure 22

68% of polled parks think the lack of funds to add and improve the service offer is the more important difficulty. In second position, 57% of parks answered that the management body of the park has lack of personnel, they are understaffed.

29% of cases perceive a lack of support of other institutions that provides useful services for these companies. In 21% of cases parks have problems because they have limited facilities and space that sometimes cannot meet the requirements of new business models.

Only 7% of STPs think that the professional profiles of the managing bodies of the parks are not ready to provide specific services for companies. Another problem mentioned by one STP is that the new business models are very different from each other and because of this, the demands are also quite different among them, making it very difficult to fulfill all the requirements.

After this analysis of park strategies, benefits for organisations and services design, it would be good to define the current and future needs that these companies have. To do this analysis we collected the opinions of STPs and companies about this topic.

Current and future needs of new business models

First, we will analyse this item on the side of science and technology parks.

Current and future main needs of new business models

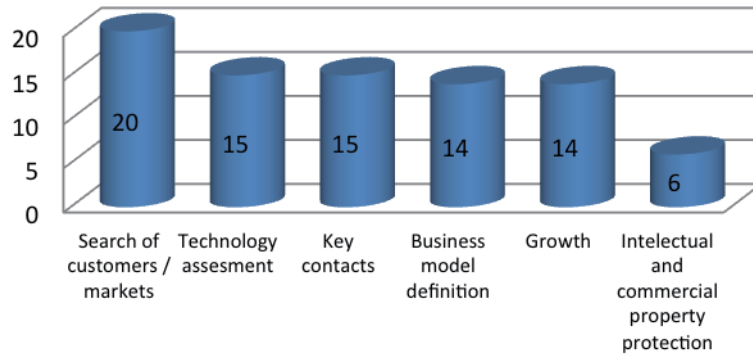


Figure 23

71% of polled parks think that the search for customers and new markets is the main need of new companies. After that, 54% of parks believe that the technology assessment and facilitate key contacts are and will be important companies' requirements.

In third place mentioned by the 50% of the STPs we have a draw in two needs related with the management: half of the parks indicated the business model definition and the business growth as important needs. Finally the 21% think that intellectual and commercial property protection issues will have relative importance. Secondly, we asked the same question to the companies. In this case we got the following results.

Current and future main needs of new business models

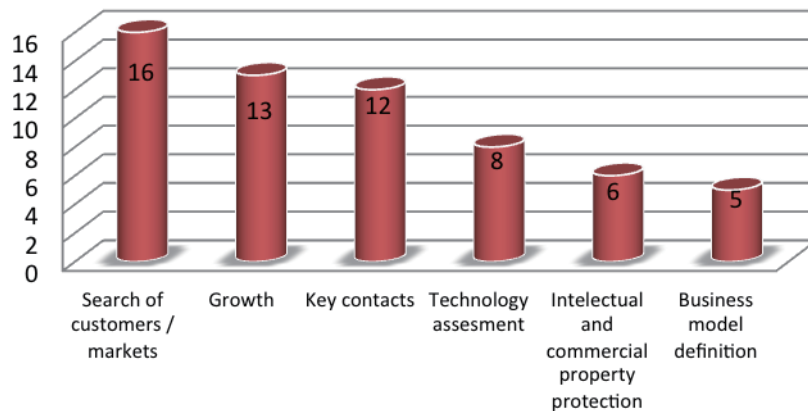


Figure 24

On the side of companies we can find some similarities, just like STPS, the first need, highlighted for the

companies, is the search of customers and new markets (84%). The second need refers to business growth (68%). In third position, more than the half of polled companies think facilitate the access to key contacts (63%) is and will be one of the main needs.

The fourth need, mentioned by less than half of the companies, (42%) is the technology assessment (42%). Finally other important needs for companies are the needs related with intellectual and commercial property protection (32%) and the business model definition 26%.

CONCLUSIONS:

After analysing all the information collected by both surveys, we have reached the following conclusions:

1. The new business models of the Spanish Science and Technology parks are characterized by having a young managing team with a high level of education and they base their innovation in the product or services that they develop.
2. These companies are born with an international vocation and their main international markets are: Europe, Latin America and North Africa. For them, international markets represent more than 26% of their incomes.
3. In Only 16% of cases, the origin of the funding was 100% private which shows us that Spain needs to raise the private investment in R&D.
4. The big majority of surveyed entities consider that STPs to be the ideal place for their business models because they create a singular innovative environment including relations with the university, adapted infrastructures, facilities and specific services, cooperation with other innovation agents and attraction of new talent.
5. The services most provided by STPs according to with the six areas that we have analysed are: coworking spaces, training in cross competences, workshops about funding sources, workshops about international programs, collaboration with universities and events organization in communication and marketing services. According with results we could confirm that Spanish STPs provide their facilities and spaces to foster the exchange of ideas and networking between their tenants.
6. According to what we have said before, the STPs' most appreciated services by surveyed companies is events organization followed by internationalisation, newsletter services and collaboration with university and research groups.
7. Regarding to internationalisation services, it is remarkable that despite a third surveyed companies not using these services, those that use them are benefiting in a very positive way.
8. 82% of respondent STPs take into account these new tenants when they improve their strategies but only 50% develop specific programs addressed to them. The main reasons for this situation are the lack of funds to provide new services, lack of personnel and lack of support of other institutions.
9. By analysing the current and future needs of these new tenants we could say that the parks are getting the right information from them. Comparing the data of STPs and companies, both agree on the importance of the search for new customers and markets. Growth and networking (key contacts) are also items where parks and organisations agree. STPs appreciate the technology assessment more than companies taking up the second place for them while is the fourth for the enterprises.
10. As a final conclusion, we can say that the location of these new companies in STPs facilities creates a Win – Win situation. The main benefits for parks are: promotion of parks' innovative image and attracting new business and new talent. On the side of companies, the main benefits of location in a STP are: innovative environment, infrastructures and services, collaboration with university and brand identity thanks to the possibility of representation has to the park.