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THE SAMUEL NEAMAN INSTITUTE FOR ADVANCED STUDIES IN SCIENCE AND TECHNOLOGY

IFISE
Israeli Financing Instruments
for the Support of Entrepreneurship

An Evaluation of the Israeli Technological Incubator Program and Its Projects

Prof. Daniel Shefer Dr. Amnon Frenkel

August 2002

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August 2002

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Introduction

A variety of programs have been proposed in different countries and regions to provide incentives to attract new High-Tech firms. These programs can be divided roughly into four categories, each focusing on a different aspect of new-firm formation: (1) fiscal programs, (2) direct financing programs, (3) consulting programs, and (4) infrastructure-oriented programs. The Technological Incubator program is a complementary program that overlaps all four categories, while providing several services that differ according to the definition and sponsor of the incubator. These services include the funneling of public and private venture capital to projects, business and marketing consultation, and the provision of low-cost rent and infrastructure. At a national level, the technological incubator program may be seen as a tool for filtering and developing valuable, original ideas and for providing seed-capital. At a local level, the incubator may be viewed as a means of local economic development, since it can induce the creation and development of new firms in a specific location.

Study Objectives

The principal objectives of this study are to analyze and evaluate the technological incubator program in Israel, its role as an instrument for the development of new technologies (hi-tech), and as a prototype or a model-to-follow for European countries, specifically for Italy.

Other objectives included:

- Examining the success of the technological incubators program, measured in terms of the rate of projects graduating from the incubators, and their success in securing funds while in the program, but more importantly after graduation.
- Analyzing the incubator's operation: the process of project selection, the projects' field of activities, the background of the project initiators applying to the incubator, and the project initiators' criteria for choosing an incubator.
- Classifying the projects by major fields of activity. Identifying the more successful fields in terms of rate of project successfully graduating from the incubators and scope of securing funds, while operating in the incubator and after leaving it.

- Analyzing the spatial distribution of the incubators and examining their contribution to regional economic development. The differences between incubators located in metropolitan regions, intermediate regions, and peripheral regions were intensely examined.
- Examining the effect of incubator specialization on the efficiency of services from the perspective of the incubator managers, and the contribution of specialization to the rate of success of the projects.
- Examining the manner in which incubators function, and the incubator managers' and project initiators' level of satisfaction from the services provided by the program.
- Examining what improvements need to be made in the incubators operation, and where additional support is required

The Israeli Technological Incubator Program

It is important to point out that the aim of the technological incubator program, as a development program "from below" is to foster entrepreneurial activities from the very beginning of a project's initiation. Therefore, the incubator has the advantages and drawbacks typical of this kind of program. On the one hand, it can help to create a healthy entrepreneurial culture by empowering local people and encouraging them to develop their own firms locally. On the other hand, it works very slowly: at least 10-15 years are needed in order to assess the actual impact of the program on employment and economic development. A technological incubator located in a remote region may be able to provide a number of functions that are seldom found in peripheral areas, such as venture capital supply, business and legal consultation, and the filtering of valuable ideas. Obviously, however, it cannot help in increasing the supply of skilled manpower.

In the early 1990's, the Israeli High-Tech industry began to blossom in an unprecedented manner. The electronics industry, for instance, which accounts for most of the High-Tech sector, increased its sales from $2 billion in 1986 [Association of Electronics Industries, 1996] to $12.5 billion in 2000. Formal Israeli venture capital funds, internal and external, almost non-existent until 1990, totaled some $4.2 billion in 2000 [Avnimelah & Teubal, 2001]. The exceptional growth of Israeli High-Tech firms in the civilian sector began in 1986 with the closure of the "Lavi" project (the

Israeli-designed fighter airplane), which caused several thousand engineers to leave the military industry for the civil sector and often to become technological entrepreneurs. The boom was bolstered by the massive immigration of highly skilled workers from the former Soviet Union in the early 1990's.

Start-ups have played a crucial role in Israel's High-Tech growth. According to the Office of the Chief Scientist (which operates Israel's public-sector R&D incentives programs), Israel produces the second highest absolute number of technological start-up companies per year in the world after the U.S. [OCS, 1997]. Although start-up capital is usually provided by venture capital funds, seed capital is often supplied by the technological incubators. The incubator program was initiated in the wake of a large influx of immigrants from the former USSR, many of whom were scientists and engineers.

Between 1990 and 1993, 28 incubators were established throughout the country; 24 were in operation by the time of the field survey[1] (see Map 1). The Office of the Chief Scientist of the Ministry of Industry and Trade grants up to $175,000 per annum to each incubator and up to $150,000 per year to each project for a maximum of two years. The level of the grant is up to 85% of the approved budget of the project [Ministry of Industry and Trade, 2001][2]. The additional 15%, "complementary financing," is to be supplied by the entrepreneur or by a partner in exchange for equity in the project. Each incubator is a not-for-profit entity, usually sponsored by a university, a municipality, or a large firm. There is no sector limitation, and an incubator can support between 8 and 12 projects. The incubator's manager, with the help of a group of professional advisors, selects the most promising projects from a multitude of enquiries. Then, together with the entrepreneur and an advisor, they prepare a "project folder" for submission to the incubator's steering committee. This committee, chaired by the incubator's manager, is normally composed of academics, industrialists, and community leaders. The final decision is determined by the Central Incubators Administration in the Office of the Chief Scientist, who may request the advice of additional experts. Projects approved are evaluated anew after one year, and the decision is made whether to give them another year of support. In very few cases,

[1] By the time the survey was conducted, the number of incubators in operation was reduced to 24.
[2] Technological Incubators in Israel. Ministry of Industry and Trade, Office of the Chief Scientist (January 2001).

mainly when a project deals with biotech, a third year of support is granted. The principal criteria for project selection are these: (1) product-oriented, (2) primarily export-oriented, (3) based on R&D, (4) feasible with the available resources.

Methodology

The data employed in this study were collected by means of two well-constructed questionnaires (instruments). Managers of 21 incubators (of a total of 24) were personally interviewed and samples of 109 projects (of a total of 208) were thoroughly interviewed between May and September 2001. For the purpose of comparison, the incubators and the projects within them, were divided into sub-groups: by geographic sub- location (metropolitan, intermediate, and peripheral), type of incubator (general and specialized), and type of sponsorship (with and without outside sponsorship). The projects were also classified by major field of activity.

The spatial distribution of the incubators among the three sub-regions is presented in map 1. This division was used to examine the differences between the incubators according to spatial distribution, and identify the effect of spatial location on multitude of factors about which the subjects were questioned during the field survey.

We classified an incubator as specialized if 75% or more of the projects operating in its framework belonged to no more than three fields of activity (see appendix 1). Thirteen of the 21 incubators analyzed were classified under this rule-of-thumb as “specialized incubators”, while the rest were classified as “general incubators”. Thus, we conclude that a trend of specialization can be observed in the operation of incubators. This trend is logical and sensible in view of the specific knowledge and comparative advantage that is accrued in specialized incubators.

On this subject, the hypothesis that was tested was to what extent does specialization bring about higher rates of success for the participating projects. Another issue that was examined was whether higher levels of assistance were provided to projects in the specialized incubators, as would be expressed by the level of satisfaction of the incubator managers and project initiators from the services rendered by the incubator. Level of satisfaction, by its very nature, is a subjective value and thus does not measure objectively the level of services that the incubator provides to a project. Nevertheless, it gives a good indication of the support that projects receive within the incubator.

Some of the survey questions were designed to elicit the significance of different factors that assist in the operation of the projects, and may contribute to their success after graduation from the incubator. These questions were referred both to the incubator managers and project initiators operating in those incubators. In order to examine the level of importance/satisfaction, a list of 18 factors was presented to each interviewee, who was requested to give a score representing his/her level of impotence/satisfaction from each factor. The ordinal scale used here ranged from 1 (not relevant/very unsatisfied) to 5 (very important/very satisfied). First, the replies obtained from incubator managers and project initiators were analyzed separately, and then a comparison was made between these two groups, using geographical location as well as incubator type classifications. The geographical division included three sub-regions: metropolitan, intermediate, and peripheral (see Map 1). The second classification included two types of incubators: general and specialized.

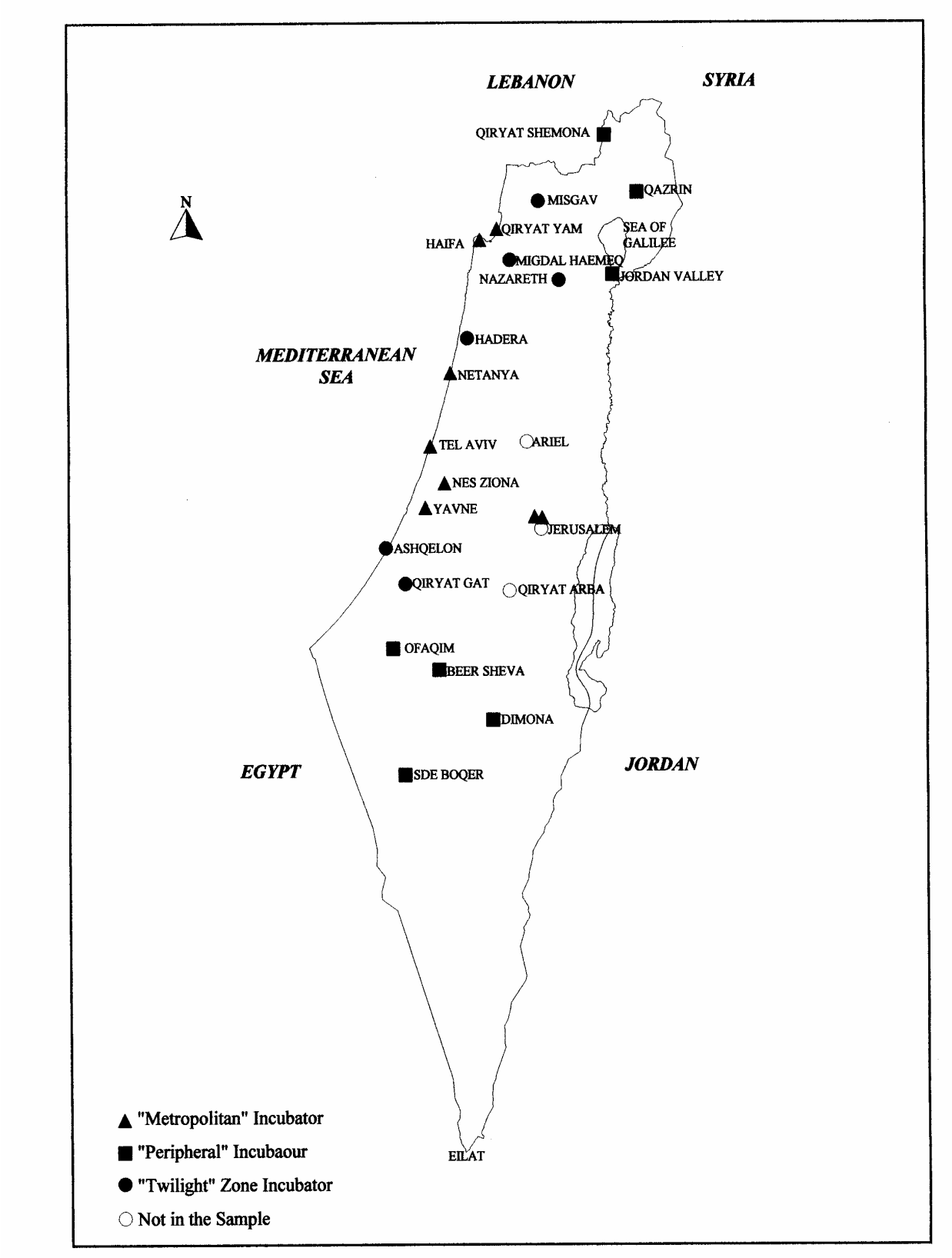
We also analyzed the project initiators' level of satisfaction as well as the incubator managers' level of satisfaction as it pertained to the various fields, assuming there were some field-specific needs. Finally we analyzed the project initiators' level of satisfaction with their previous place of work, particularly the differences and similarities in the level of satisfaction of project initiators who came from academia versus those who came from industry.

The statistical analysis of the level of satisfaction as expressed by the various project initiators and incubator managers classified by group was carried out with the Spearman rank order correlation coefficient. The rank was based on the average score given to each item by a designated group of project initiators. A statistically significant high Spearman correlation coefficient implies that the two groups of project initiators under investigation equally value the relative importance of the list of 18 items and vice versa. Additionally, in order to test the differences in an incubator's support services for each factor separately, an a-parametric statistical test (Mann-Whitney U-test) was conducted. This test was employed only for the level of satisfaction of the 109 project initiators, who were classified into a number of paired sub-groups.

The first chapter of the report presents the results from the analysis of the incubator managers' survey. The second chapter presents the results of the analysis of the

project initiators' survey. This group included 109 projects operating in 21 incubators. Chapter 3 presents a comparative analysis (incubator managers and project initiators), with regard to the questions dealing with the significance of various factors in the success of a project and satisfaction levels from the services provided by the incubator. Finally, chapter 4 summarizes the conclusions obtained from the study, and brings forth suggestions for increasing the success rates of the technological incubator programs.

Map 1: Spatial Distribution of Technological Incubators in Israel



Chapter 1: Survey of Incubator Managers (N=21)

1.1 Project Filtering Process

This chapter presents the project-selection process carried out in each incubator. The incubator managers were thoroughly interviewed in regard to the statistics on the selection process.

The first stage involved the project initiator's general presentation of the idea (could be verbal only). If the idea sounded "legitimate" to the incubator manager, the initiator was encouraged to submit a more complete "project portfolio". At this point, the manager submitted the "project folder" to the incubator expert committee. Projects approved by the incubator expert committee were forwarded to the office of the Chief Scientist for an evaluation of the proposal. Projects approved by that office were allowed into the program. This process is presented in Figure 1.

The makeup of the project selection committee in most incubators (63%) is permanent and usually includes the incubator manager, experts from academia and industry, business and financial experts. The permanent number of experts in the committee changes from one incubator to another, within the range of 3-12 members. Apart from the permanent staff of the professional committee, approximately one-third of the incubators have an ad-hoc team that varies according to the field of the project in question. Decisions regarding accepting projects to the incubator are made in full consensus, i.e., a project will be rejected with even one objection.

Figure 1: Project Selection Process – General Flow Chart and Percentage Approved

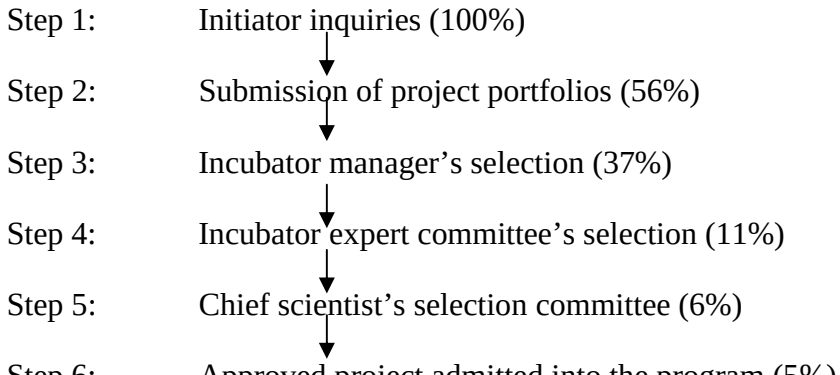


Figure 1 and Table 1 shows that only 5% of the projects submitted were admitted into the incubator program in the last three years. When we break down the statistic by location, we can observe that the average number of inquiries to incubators in the central and the intermediate regions was greater by far than the number of inquiries in peripheral regions (Table 1). On the other hand, 8% of the inquiries were approved in peripheral incubators, compared to only 5% in the central and intermediate regions. The implication of these statistics is that the selection process is significantly more stringent in the central and intermediate regions.

Although the tendency of incubators to specialize has become very pronounced in recent years (two third of the incubators that we interviewed were classified as specialized), there is no difference in the final analysis between specialized and general types in the percentage of projects admitted to the program (5%; see Table 2).

As for classification by sponsorship, no significant differences were observed in the rates of acceptance between incubators with sponsorship and those without sponsorship (5%; see Table 3).

Figure 2: Project-Selection Process in the 21 Incubators

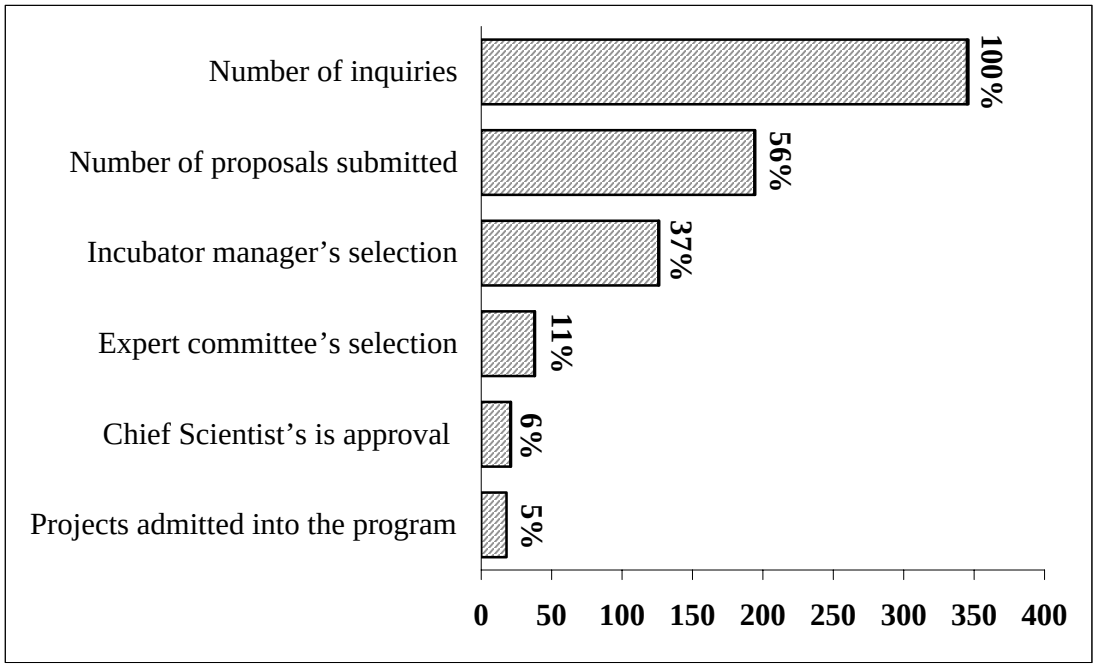


Table 1: Project-Selection Process in the 21 Incubators, by Location

Filtering Process (per average incubator)	Total		Location					
	Number	%	Metropolitan region		Intermediate region		Peripheral region	
			Number	%	Number	%	Number	%
Number of inquiries	345	100%	397	100%	372	100%	259	100%
Number of proposals submitted	194	56%	232	59%	252	68%	104	40%
Incubator manager's selection	126	37%	145	37%	152	41%	84	33%
Expert committee's selection	38	11%	40	10%	30	8%	40	15%
Chief Scientist's is approval	21	6%	24	6%	17	5%	20	8%
Projects admitted into program	18	5%	18	5%	17	5%	20	8%
Number of incubators	21		9		5		7	

Table 2: Project-Selection Process in the 21 Incubators, by Incubator Type

Filtering Process (per average incubator)	Total		Incubator type			
	Number	%	General type		Specialized type	
			Number	%	Number	%
Number of inquiries	345	100%	408	100%	306	100%
Number of proposals submitted	194	56%	231	57%	171	56%
Incubator manager's selection	126	37%	179	44%	94	31%
Expert committee's selection	38	11%	36	9%	39	13%
Chief Scientist's approval	21	6%	24	6%	19	6%
Projects admitted into program	18	5%	22	5%	17	5%
Number of incubators	21		8		13	

Table 3: Project-Selection Process in the 21 Incubators, by Sponsorship

Filtering Process (per average incubator)	Total		Sponsorship			
	Number	%	With sponsor		Without sponsor	
			Number	%	Number	%
Number of inquiries	345	100%	335	100%	356	100%
Number of proposals submitted	194	56%	199	59%	189	53%
Incubator manager's selection	126	37%	126	38%	127	36%
Expert committee's selection	38	11%	39	12%	36	10%
Chief scientist's approval	21	6%	22	7%	20	6%
Projects admitted into program	18	5%	18	5%	20	5%
Number of incubators	21		11		10	

During the interviews, the incubator managers were asked to evaluate the procedure of the project selection process. Analysis of the responses indicates that 42% of the incubator managers feel that the current selection process is optimal, 26% feel it is quite good and 32% believe it could be improved. No significant differences were found according to geographic distribution of the incubators.

The incubator managers who proposed ways to improve the selection process, recommended increasing the budget of the incubator and preparing a better and more sound business plan prior to entering the incubator, as well as having additional experts evaluating appropriate projects. In addition, it was recommended to add a short business plan that will set policies and direct projects from the very first stage. Another recommendation was to better examine the personality of the project initiators, which apparently bears great impact on the success of the project.

1.2 Project Distribution in the Incubators

The projects in the incubators were classified by nine field of activity as shown in Table 4 and Figure 3. There was one field that appeared to have a relatively high degree of concentration: medical equipment (21.2 %).

Table 4: Distribution of Projects in the 21 Incubators, by Field

Field	All Incubators	
	Number	%
1. Drugs	19	9.1%
2. Medical equipment	44	21.2%
3. Chemicals and raw materials	26	12.5%
4. Mechanical engineering	24	11.5%
5. Hardware, communication, and electronic components	17	8.2%
6. Optical and precision equipment	18	8.7%
7. Biotechnology	26	12.5%
8. Energy and ecology	21	10.1%
9. Software	13	6.3%
Total	208	100%

52.6% of the projects related to drugs, and 50% of the projects in medical equipment were located in the central region. Likewise, a high concentration of mechanical engineering projects (45.8%) and of optical and precision-equipment projects (44.4%) were found in central areas. In the intermediate regions, there was a high concentration of projects in biotechnology (46.2%); hardware, communication and electronic components (41.2%); and software (38.5%). The peripheral region showed a high level of concentration in two fields: energy and ecology projects (57.1%); and optical and precision equipment (44.4%) (Table 5).

Figure 3: Distribution of Projects in the 21 Incubators, by Field

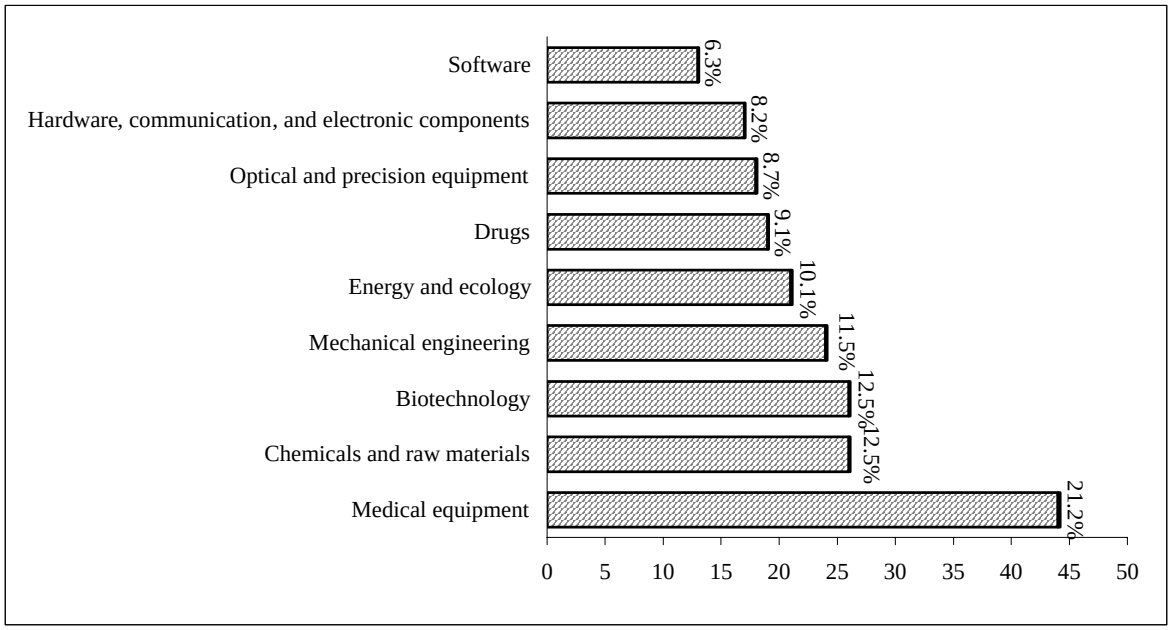


Table 5: Distribution of Projects in the 21 Incubators, by Field and Location (percentage of total number of projects in the field)

Field	Location					
	Metropolitan region		Intermediate region		Peripheral region	
	Number	Percentage of Total	Number	Percentage of Total	Number	Percentage of Total
1. Drugs	10	52.6%	6	31.6%	3	15.8%
2. Medical equipment	22	50.0%	8	18.2%	14	31.8%
3. Chemicals and raw materials	9	34.6%	9	34.6%	8	30.8%
4. Mechanical engineering	11	45.8%	6	25.0%	7	29.2%
5. Hardware, communication, and electronic components	6	35.3%	7	41.2%	4	23.5%
6. Optical and precision equipment	8	44.4%	2	11.1%	8	44.4%
7. Biotechnology	7	26.9%	12	46.2%	7	26.9%
8. Energy and ecology	7	33.3%	2	9.5%	12	57.1%
9. Software	4	30.8%	5	38.5%	4	30.8%
Total number of projects	84	40.4%	57	27.4%	67	32.2%
Average number of projects per incubator	9.3		11.4		9.6	

Within regions, we can observe a high level of concentration of medical equipment projects in central regions (26.2%), of biotechnology projects in intermediate regions (21.1%), and of energy and ecology in peripheral regions (17.9%) (Table 6). These findings attest to the variance in the attractiveness of incubator location and activity fields, which are apparently affected by proximity to knowledge and research centers,

large pool of highly skilled workers in the relevant fields and specialized services, such as laboratories, etc.

During the interviews with the incubator managers, the issue of incubator location was raised, and the relative advantage of certain locations was examined. Generally speaking, it was found that most managers (55%) feel that the location of the incubator bears some relative advantage. Significant differences were found between managers of incubators according to location. While most managers of incubators located in the metropolitan areas (89%) believe that their location is advantageous, only 29% of the managers of incubators located in peripheral areas and 25% of the managers of incubators located in the intermediate regions felt the same about the current location of their incubators.

Managers of incubators located in metropolitan areas claimed that the primary advantages of their location are: proximity to the central part of the country, to industrial areas, and to academia and research institutes. As for managers of incubators located in the periphery who claimed their location is advantageous, they stated their proximity to academia (Ben-Gurion University) and industrial areas, as well as the financial benefits that they are entitled to because of their peripheral location.

The most common explanation given by managers of incubators located in the intermediate regions and periphery, who did not see their location as bearing any relative advantage, was distance from the central part of the country. According to them, even though the government widely supports peripheral regions, in all other aspects their incubators are at disadvantage due to their location, such as: distance from the center of the country, lack of accessibility to the pool of highly skilled workers, distance from academia, financial sources and investors. They claimed it was more expensive and logistically difficult to attract experts to their incubators. They also believed that peripheral incubators are less attractive, and therefore must accept less promising projects, compared with the incubators located in the central part of the country.

Table 6: Distribution of Projects in the 21 Incubators, by Field and Location (percentage of total number of projects in the region)

Field	Location					
	Metropolitan region		Intermediate region		Peripheral region	
	Number	Percentage of total	Number	Percentage of total	Number	Percentage of total
1. Drugs	10	11.9%	6	10.5%	3	4.5%
2. Medical equipment	22	26.2%	8	14.0%	14	20.9%
3. Chemicals and raw materials	9	10.7%	9	15.8%	8	11.9%
4. Mechanical engineering	11	13.1%	6	10.5%	7	10.4%
5. Hardware, communication, and electronic components	6	7.1%	7	12.3%	4	6.0%
6. Optical and precision equipment	8	9.5%	2	3.5%	8	11.9%
7. Biotechnology	7	8.3%	12	21.1%	7	10.4%
8. Energy and ecology	7	8.3%	2	3.5%	12	17.9%
9. Software	4	4.8%	5	8.8%	4	6.0%
Total number of projects	84	100%	57	100%	67	100%

When the projects are classified by field and incubator type, a relatively high share of projects in medical equipment (19%) and biotechnology (14%) can be observed in the general type of incubators and of medical equipment (23.1%) and chemicals and raw materials in the specialized incubators (15.7%) (Table 7).

Table 8 presents the distribution of projects by field and sponsorship. Sponsored incubators seem to be concentrated in drug-related projects (68.4%) and chemicals and raw material (69.2%). On the other hand, we can observe in incubators without a sponsor a high concentration of projects in hardware, communication, and electronic components (64.7%), biotechnology (53.8%), and software (53.8%).

Table 7: Distribution of Projects in the 21 Incubators, by Incubator Type

Field	General		Specialized	
	Number	Percentage	Number	Percentage
1. Drugs	7	7.0%	12	11.1%
2. Medical equipment	19	19.0%	25	23.1%
3. Chemicals and raw materials	9	9.0%	17	15.7%
4. Mechanical engineering	13	13.0%	11	10.2%
5. Hardware, communication, and electronic components	11	11.0%	6	5.6%
6. Optical and precision equipment	9	9.0%	9	8.3%
7. Biotechnology	14	14.0%	12	11.1%
8. Energy and ecology	10	10.0%	11	10.2%
9. Software	8	8.0%	5	4.6%
Total number of projects	100	100%	108	100%

Table 8: Distribution of Projects in the 21 Incubators, by Sponsorship (percentage of total number of projects in field)

Field	Sponsorship			
	With sponsor		Without sponsor	
	Number	%	Number	%
1. Drugs	6	31.6%	13	68.4%
2. Medical equipment	18	40.9%	26	59.1%
3. Chemicals and raw materials	8	30.8%	18	69.2%
4. Mechanical engineering	12	50.0%	12	50.0%
5. Hardware, communication, and electronic components	11	64.7%	6	35.3%
6. Optical and precision equipment	8	44.4%	10	55.6%
7. Biotechnology	14	53.8%	12	46.2%
8. Energy and ecology	10	47.6%	11	52.4%
9. Software	7	53.8%	6	46.2%
Total number of projects	94	45.2%	114	54.8%

1.3 Sources of Funding of Incubators

The major source of funding for all incubators derives from the Office of the Chief Scientist (OCS) in the Ministry of Industry and Trade (32%). Other major sources are royalties and dividends (24.5%) and income derived from sponsors (20.6%) (Table 9). This finding testifies to the maturity of the incubator program, that 10 years after its initiation is successful in securing a high percentage of its funding from external sources.

The extent of government support for incubators consistently increases as one moves from the central region (30.4%) to the intermediate region (36.9%) and to the peripheral region (49.1%). Clearly, this trend suggests that incubators located in the central and intermediate regions are able to secure more funds from non-government sources than are incubators located in peripheral regions (Table 10 and Figure 4).

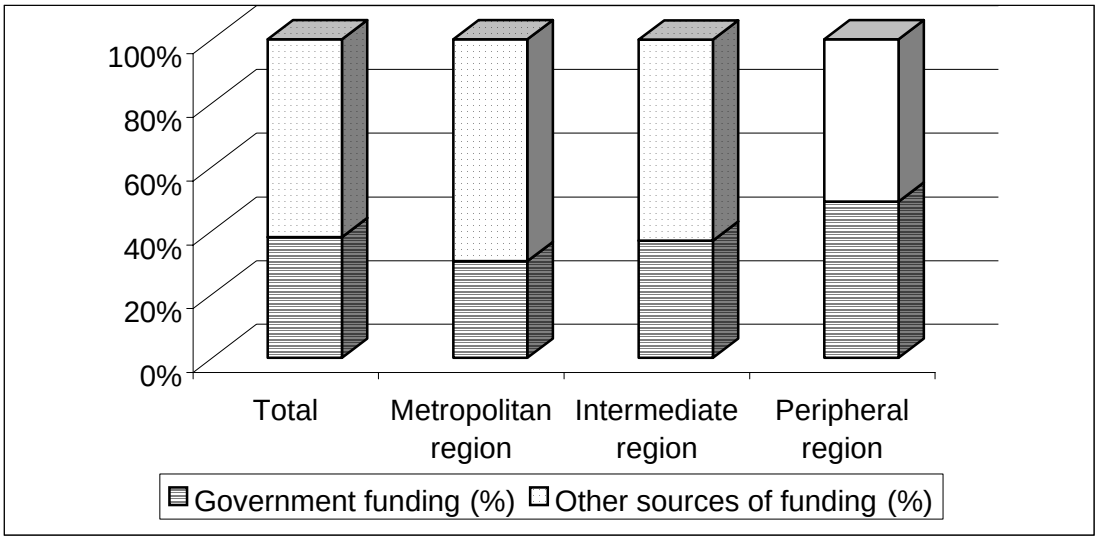
Table 9: Sources of Funding of Incubators

Sources of funding	Total Budget In $ 000	Percentage	Average Budget per Incubator
Chief Scientist's Office	4,513	38.0%	214,905
Overhead payment by projects	1,480	12.5%	70,476
Income received from rental	138	1.2%	6,571
Royalties, sales of shares and dividends	2,905	24.5%	138,333
Sponsors	2,447	20.6%	116,524
Local authorities	390	3.3%	18,571
Total budget	11,873	100%	565,381

Table 10: Average Source of Funding of Incubators, by Location

Sources of funding	Total	Location of incubators		
		Metropolitan region	Intermediate region	Peripheral region
Total budget per average incubator (in $)	$565,381	$602,111	$498,000	$566,286
Government funding (%)	38.0%	30.4%	36.9%	49.1%
Other sources of funding (%)	62.0%	69.6%	63.0%	50.9%
Number of incubators	21	9	5	7

Figure 4: Average Source of Funding of Incubators, by Location



An interesting and unexpected finding was obtained from the analysis of the data according to incubator type. It was found that the general incubators were more successful in generating a large budget than the specialized incubators, i.e., specialization alone is not sufficient in increasing the budget. However, significant differences were found in budget size generated from various sources. In this case, a major part of the general incubators' budget was generated from non-government sources (Table 11).

Table 11: Average Source of Funding of Incubator, by Incubator Type

Funding Sources	Total	General type	Specialized type
Total budget per average incubator (in $)	$565,381	$614,500	$535,154
Government funding (%)	38.0%	41.5%	35.6%
Funding derived from other sources (%)	62.0%	58.5%	64.4%
Number of incubators	21	8	13

1.4 Complementary Funding of Projects, by Field

In this section, we present a distribution by field of projects that secured additional funding over and above the program's project allotment. There are three fields that stand out in the pack: biotechnology (38.5%), drugs (36.8%), and software (30.8%) (Table 12). There are several sources of this complementary funding: the incubators' internal funding sources, strategic business partners, investors from the same field, and the project managers' own financial sources (Table 13). The leading sources of complementary funding are investors from the same field (35.1%) and external investors ("angels") (30.8%).

Table 12: Projects That Secured Significant Complementary Funding, by Field

Field	Number	Percentage of Total
1. Drugs	7	36.8%
2. Medical equipment	7	15.9%
3. Chemicals and raw materials	4	15.4%
4. Mechanical engineering	5	20.8%
5. Hardware, communication, and electronic components	3	17.6%
6. Optical and precision equipment	4	22.2%
7. Biotechnology	10	38.5%
8. Energy and ecology	2	9.5%
9. Software	4	30.8%
Total number of projects	46	22.1%

Table 13: Major Sources of Complementary Funding

Source of funding	Number	Percentage of Total*
The incubator itself	26	12.5%
Sponsor	9	4.3%
External investors	64	30.8%
Investors / companies from the same field	73	35.1%
The entrepreneur (or family sources)	30	14.4%
Venture capital	5	2.4%

* N= 208

1.5 Projects that "Graduated" and Projects that "Dropped Out"

In the three years prior to the period when the interviews took place (May-September 2001), 235 projects "graduated" and 37 projects "dropped out". This represents a very high rate of success (86.4%).[3]The highest rates of success were recorded for projects

[3] *Evaluating project success using this parameter is obviously limited to the time frame during which a project is in the incubator, and is not necessarily an indication of the long-term strength of companies leaving the program.*

belonging to hardware, communication, and electronic components (95.5%); biotechnology (90.3%) and drugs (90.0%). On the other hand, the highest rate of failure was found among projects belonging to the energy and ecology field (31.3%) (Table 14).

Table 14: Projects That "Graduated" and Projects That "Dropped Out", by Field

Field	Total		Projects Graduating		Projects Dropped Out	
	Number	%	Number	Percentage of total	Number	Percentage of total
1. Drugs	10	3.7%	9	90.0%	1	10.0%
2. Medical equipment	54	19.9%	46	85.2%	8	14.8%
3. Chemicals and raw materials	47	17.3%	41	87.2%	6	12.8%
4. Mechanical engineering	36	13.2%	32	88.9%	4	11.1%
5. Hardware, communication, and electronic components	22	8.1%	21	95.5%	1	4.5%
6. Optical and precision equipment	24	8.8%	19	79.2%	5	20.8%
7. Biotechnology	31	11.4%	28	90.3%	3	9.7%
8. Energy and ecology	16	5.9%	11	68.8%	5	31.3%
9. Software	32	11.8%	28	87.5%	4	12.5%
Total number of projects	272	100%	235	86.4%	37	13.6%

No significant differences were found among the graduating projects when classified by area (Table 15). Likewise, no significant differences were detected between projects located in general type incubators and those in specialized incubators (Table 16).

Table 15: Projects That "Graduated" in the Past 3 Years, by Location

Field	Location					
	Metropolitan region		Intermediate region		Peripheral region	
	Number	%	Number	%	Number	%
1. Drugs	5	4.5%	4	5.7%	0	0.0%
2. Medical equipment	23	20.5%	11	15.7%	12	22.6%
3. Chemicals and raw materials	20	17.9%	11	15.7%	10	18.9%
4. Mechanical engineering	20	17.9%	5	7.1%	7	13.2%
5. Hardware, communication, and electronic components	13	11.6%	6	8.6%	2	3.8%
6. Optical and precision equipment	14	12.5%	1	1.4%	4	7.5%
7. Biotechnology	1	0.9%	17	24.3%	10	18.9%
8. Energy and ecology	4	3.6%	1	1.4%	6	11.3%
9. Software	12	10.7%	14	20.0%	2	3.8%
Total number of projects	112	100%	70	100%	53	100%
Percent from total graduated projects		47.7%		29.8%		20.5%

Table 16: Projects That "Graduated" in the Past 3 years, by Incubator Type

Field	Type			
	General		Specialized	
	Number	%	Number	%
1. Drugs	6	5.8%	3	2.3%
2. Medical equipment	20	19.4%	26	19.7%
3. Chemicals and raw materials	14	13.6%	27	20.5%
4. Mechanical engineering	12	11.7%	20	15.2%
5. Hardware, communication, and electronic components	10	9.7%	11	8.3%
6. Optical and precision equipment	2	1.9%	17	12.9%
7. Biotechnology	20	19.4%	8	6.1%
8. Energy and ecology	6	5.8%	5	3.8%
9. Software	13	12.6%	15	11.4%
Total number of projects	103	100%	132	100%

1.6 Sources of Funding Secured by Graduating Projects

All graduating drugs projects were successful in securing financial support. It is worth noting that a high percentage of graduating projects of all types (77.9%) secured financial support (Table 17). A review of the rate of success in securing funding after graduation, by location, shows that the highest rate came in the intermediate regions (84.3%), the lowest in the peripheral regions (67.9%) (Table 18).

Table 17 Graduating Projects that Succeeded and Did Not Succeed in Securing Financial Support, by Field

Field	All Incubators		Did Not Secure Financial Support		Secured Financial Support	
	Number	%	Number	Percentage of Total	Number	Percentage of Total
1. Drugs	9	3.8%	0	0.0%	9	100.0%
2. Medical equipment	46	19.6%	12	26.1%	34	73.9%
3. Chemicals and raw materials	41	17.4%	9	22.0%	32	78.0%
4. Mechanical engineering	32	13.6%	12	37.5%	20	62.5%
5. Hardware, communication, and electronic components	21	8.9%	6	28.6%	15	71.4%
6. Optical and precision equipment	19	8.1%	6	31.6%	13	68.4%
7. Biotechnology	28	11.9%	2	7.1%	26	92.9%
8. Energy and ecology	11	4.7%	2	18.2%	9	81.8%
9. Software	28	11.9%	3	10.7%	25	89.3%
Total number of projects	235	100%	52	22.1%	183	77.9%

Table 18: Graduating Projects That Succeeded in Securing Financial Support, by Location

Field	Location					
	Metropolitan region		Intermediate region		Peripheral region	
	Number	% of Total	Number	% of Total	Number	% of Total
1. Drugs	5	100.0%	4	100.0%	0	
2. Medical equipment	16	69.6%	9	81.8%	9	75.0%
3. Chemicals and raw materials	18	90.0%	8	72.7%	6	60.0%
4. Mechanical engineering	13	65.0%	3	60.0%	4	57.1%
5. Hardware, communication, and electronic components	9	69.2%	4	66.7%	2	100.0%
6. Optical and precision equipment	10	71.4%	1	100.0%	2	50.0%
7. Biotechnology	1	100.0%	17	100.0%	8	80.0%
8. Energy and ecology	4	100.0%	1	100.0%	4	66.7%
9. Software	12	100.0%	12	85.7%	1	50.0%
Total number of projects	88	78.6%	59	84.3%	36	67.9%

Small, but not significant, differences were found between projects that had graduated from specialized compared to general types of incubators (Table 19). Here too it seems that specialized incubators don't necessarily promote higher success rates among projects operating within them, compared with general incubators. The major sources of financial support for graduating projects were investment companies and the Office of the Chief Scientist: 39.3% and 20.1%, respectively (Table 20).

Table 19: Graduated Projects That Succeeded in Securing Financial Support, by Incubator Type

Field	Type			
	General		Specialized	
	Number	% of Total	Number	% of Total
1. Drugs	6	100.0%	3	100.0%
2. Medical equipment	16	80.0%	18	69.2%
3. Chemicals and raw materials	8	57.1%	24	88.9%
4. Mechanical engineering	7	58.3%	13	65.0%
5. Hardware, communication, and electronic components	9	90.0%	6	54.5%
6. Optical and precision equipment	2	100.0%	11	64.7%
7. Biotechnology	19	95.0%	7	87.5%
8. Energy and ecology	4	66.7%	5	100.0%
9. Software	12	92.3%	13	86.7%
Total number of projects	83	80.0%	100	76.3%

Table 20: Graduating Projects That Secured Financial Support, by Financial Source

Source of support	Number	Percentage of Total
Chief scientist's Office	46	20.1%
R&D grants	12	5.2%
Venture capital	32	14.0%
Investments companies	90	39.3%
Strategic partner	34	14.8%
Additional investments ("angels")	6	2.6%
Self financing from sales	9	3.9%

1.7 Incubator Managers' Level of Satisfaction from the Program

In the interviews with the incubator managers, a portion of the questions dealt with their level of satisfaction as derived from a list of 18 variables that were hypothesized to be detrimental to the successful operation of incubators. The mangers were asked to score on a scale of 1 to 5 (1 = lowest level of satisfaction and 5 = highest level of satisfaction) their level of satisfaction from each variable.

First, the general, overall satisfaction from the identified variables were solicited; in the second stage, differences in the level of satisfaction were examined according to incubator location and type. The relationships between the levels of satisfaction and the sub-grouping were tested with the Spearman correlation coefficients.

Table 21 presents the ranking according to variable of the level of satisfaction derived from the support received from the technological incubator program. The five items that received the highest scores: available suitable space (3.81), legal counseling (3.81), IPR protection (3.67), management support (3.67) and strategic counseling (3.52). At the other end of the scale, these items received the lowest scores: advanced studies and re-training (2.52), access to labor pool (2.67), links to financial sources (2.76), and marketing (2.81). Nevertheless even these scores are not so low in absolute term.

Table 21: Managers' level of satisfaction

Variable	Score	Std. Deviation
Available suitable space	3.81	0.98
Legal counseling	3.81	1.17
IPR protection	3.67	1.20
Management support	3.67	0.97
Strategic counseling	3.52	1.17
Market information	3.48	1.03
Connections with suppliers	3.33	1.24
Access to inputs	3.29	0.90
International collaborators	3.24	1.22
Professional network	3.19	0.81
Networking of plants	3.19	0.98
Sources of technological information	3.14	1.20
Networking with strategic partners	3.10	1.00
Financial support	3.00	1.26
Marketing	2.81	1.12
Links to financial sources	2.76	1.30
Access to labor pool	2.67	1.11
Advanced studies and re-training	2.52	0.87
Number of incubators	21	

Table 22: Managers' Level of Satisfaction, by Location

Variable	Metropolitan region			Intermediate region			Peripheral region		
	Rank	Score	Std. Deviation	Rank	Score	Std. Deviation	Rank	Score	Std. Deviation
Management support	1	3.89	0.60	4	3.60	1.52	6	3.43	0.98
International collaborators	2	3.67	1.22	6	3.20	1.30	10	2.71	1.11
Access to inputs	3	3.56	0.53	6	3.20	0.84	8	3.00	1.29
Legal counseling	3	3.56	1.59	1	4.20	0.45	3	3.86	0.90
Available suitable space	4	3.44	0.88	2	4.00	0.71	1	4.14	1.21
IPR protection	4	3.44	1.51	3	3.80	0.84	3	3.86	1.07
Strategic counseling	5	3.33	1.50	4	3.60	1.14	4	3.71	0.76
Financial support	5	3.33	1.12	4	3.60	1.52	12	2.14	0.90
Networking of plants	5	3.33	1.22	6	3.20	0.45	8	3.00	1.00
Networking of strategic partners	5	3.33	1.12	7	3.00	1.22	9	2.86	0.69
Market information	6	3.22	1.39	3	3.80	0.45	5	3.57	0.79
Professional network	7	3.11	1.05	5	3.40	0.55	8	3.14	0.69
Links to financial sources	8	2.89	1.45	6	3.20	1.30	11	2.29	1.11
Access to labor pool	8	2.89	1.05	9	2.20	1.30	10	2.71	1.11
Sources of technological information	8	2.89	1.69	5	3.40	0.55	7	3.29	0.76
Marketing	9	2.78	1.20	8	2.60	1.52	8	3.00	0.82
Connections with suppliers	10	2.56	1.42	3	3.80	0.84	2	4.00	0.58
Advanced studies and re-training	11	2.33	0.87	9	2.20	0.84	8	3.00	0.82
Total number of managers	9			5			7		

Spearman's rho:
Between metropolitan & intermediate region r_s= 0.401, sig.=0.099
Between metropolitan & peripheral region r_s= 0.145, sig.=0.567
Between peripheral & intermediate region r_s= 0.753, sig.=0.000

The greatest differences in the scores by location were found between metropolitan incubators and peripheral incubators. The Spearman's rho was low (r_s = 0.145) and statistically insignificant. The level of satisfaction from available suitable space received the highest score in the intermediate and peripheral regions: 4.00 and 4.14, respectively. In the metropolitan region, this item received only a score of 3.44. "Management support" in the metropolitan regions, on the other hand, received the highest score (3.89), and "financial support" received the lowest score in the peripheral regions (2.14) (Table 22).

A comparison of the managers' level of satisfaction by incubator type revealed no statistically significant differences. It should be mentioned that mangers of a general type of incubator were quite satisfied with available suitable space (4.43), whereas managers of specialized incubators gave a lower score to this item (3.5). (Table 23).

Table 23: Managers' Level of Satisfaction, by Incubator Type

Subject	General type			Specialized type		
	Rank	Score	Std. Deviation	Rank	Score	Std. Deviation
Available suitable space	1	4.43	0.53	5	3.50	1.02
Management support	2	3.71	1.38	2	3.64	0.74
Legal counseling	2	3.71	1.25	1	3.86	1.17
IPR protection	3	3.57	1.27	4	3.71	1.20
Sources of technological information	3	3.57	0.98	12	2.93	1.27
Market information	4	3.43	1.27	5	3.50	0.94
Connections with suppliers	4	3.43	1.27	7	3.29	1.27
Professional network	5	3.29	0.76	9	3.14	0.86
Networking of plants	5	3.29	0.76	9	3.14	1.10
International collaborators	6	3.00	1.41	6	3.36	1.15
Strategic counseling	6	3.00	1.15	3	3.79	1.12
Financial support	7	2.86	1.07	10	3.07	1.38
Access to inputs	7	2.86	1.07	5	3.50	0.76
Networking of strategic partners	7	2.86	1.35	8	3.21	0.80
Marketing	7	2.86	1.07	13	2.79	1.19
Links to financial sources	8	2.71	1.11	13	2.79	1.42
Advanced studies and re-training	9	2.14	1.07	14	2.71	0.73
Access to labor pool	10	2.00	0.82	11	3.00	1.11
Number of incubators		8			13	

Spearman's rho:
Between general and specialized type r_s= 0.645, sig.=0.004

1.8 Barriers and Obstacles to the Operation of an Incubator

In order to identify barriers and obstacles to the operation of incubators, a set of questions were posed that yielded a score ranging from 1=insignificant to 5=detrimental.

Two items ranked very high: limited funding (4.1) and deficiency in management knowledge (4.0). More then 70% of the incubator managers ranked these two items as important or detrimental to the operation of the incubators. At the other end of the scale, inadequate available space and limited access to professional labor received the lowest ranking (1.81 and 1.76, respectively) (Table 24).

Table 24: Barriers and Obstacles to the Operation of an Incubator

Barrier	Score	Std. Deviation	Level of Importance*
Limited funding	4.10	1.00	76%
Deficiency in management knowledge	4.00	1.14	71%
Low salary	3.76	0.89	67%
Deficiency in marketing knowledge	3.67	1.24	52%
Cumbersome management	2.43	1.50	33%
Inadequate available space	1.81	1.08	10%
Limited access to professional labor	1.76	1.51	19%

N=21

* Level of importance=% of incubators reporting the specific factor as being important or detrimental.

When we analyzed the data concerning barriers and obstacles by location, we found no differences between incubators located in metropolitan and these in peripheral regions (Spearman rho, r_s=0.93) (Table 25). In the intermediate regions, deficiency in marketing knowledge received a high score of 4.6. A great deal of similarity was found in the ranking between managers of general-type incubators and those of the specialized type (Spearman rho, r_s=0.87). In the specialized type of incubators, the highest-ranked item were given to ”limited funding” (4.29) (Table 26).

Table 25: Barriers and Obstacles to the Operation of an Incubator, by Location

Barrier	Location								
	Metropolitan region			Intermediate region			Peripheral region		
	Rank	Score	Std. Deviation	Rank	Score	Std. Deviation	Rank	Score	Std. Deviation
Limited funding	1	4.44	0.73	3	3.2	1.30	1	4.29	0.76
Deficiency in management knowledge	2	4.22	1.09	2	3.8	1.64	2	3.86	0.90
Low salary	3	4.00	0.50	3	3.2	1.30	2	3.86	0.90
Deficiency in marketing knowledge	4	3.22	1.56	1	4.6	0.55	3	3.57	0.79
Cumbersome management	5	2.44	1.74	4	2.6	1.67	5	2.29	1.25
Inadequate space	6	1.56	0.88	6	1.2	0.45	4	2.57	1.27
Limited access to professional labor	6	1.56	1.33	5	1.8	1.79	6	2.00	1.73
Number of incubators		9			5			7	

Spearman's rho:
Between metropolitan & intermediate region r_s= 0.709, sig.=0.074
Between metropolitan & peripheral region r_s= 0.927, sig.=0.003
Between peripheral & intermediate region r_s= 0.591, sig.=0.162

Table 26: Barriers and Obstacles to the Operation of an Incubator, by Incubator Type

Barrier	Type					
	General			Specialized		
	Rank	Score	Std. Deviation	Rank	Score	Std. Deviation
Deficiency in management knowledge	1	4.14	0.90	2	3.93	1.27
Low salary	2	3.86	1.07	4	3.71	0.83
Limited funding	3	3.71	1.11	1	4.29	0.91
Deficiency in marketing knowledge	4	3.43	1.40	3	3.79	1.19
Limited access to professional labor	5	2.00	1.73	7	1.64	1.45
Cumbersome management	6	1.57	0.79	5	2.86	1.61
Inadequate space	7	1.43	0.79	6	2.00	1.18
Number of incubators		8			13	

Spearman's rho:
Between general and specialized type r_s= 0.866, sig.=0.012

During the interviews managers were asked about their position for or against incubator specialization. Findings indicated that most incubator managers (63%) feel that specialization should be encouraged.

An analysis of the responses regarding the advantages and disadvantages of specialization, indicated that proponents of specialization stated the following reasons: economies of scale, efficient use of financial resources, efficient management and monitoring of projects, better access to strategic partners, focus on specific issues, and recruiting a specialized team.

Managers of incubators who were opposed to the idea of specialization also stated the benefits of economies of scale, however, they felt that this was outweighed by the disadvantages of specialization. The most prominent consideration against specialization brought about by most managers was the geographic consideration – specialization will prevent access to the incubator for some initiators from the region, thus blocking potential projects. Moreover, managers who were against incubator specialization stated that technological incubators by definition are designed to promote technological initiatives from a wide variety of fields. Other considerations that were raised were: a desire to create a business center and enable the natural development of the incubator.

1.9 Conclusions

The series of interviews held with the incubator managers show that most of them believe that the technological incubator program is a good and unique program, allowing initiators with technological ideas an opportunity to fulfill their dreams. In their assessment, there is no other program in Israel that can provide individual projects (or initiators) with such personal and intensive attention, from the most initial stages until maturation. The prominent advantage of the program is its ability to actualize high-risk projects, which might not have succeeded in obtaining capital in the private sector.

A substantial number of incubator managers justify public funding for the technological incubator program. Most managers claim that the central idea of the public program is penetrating high-risk fields, into which the private sector would not dare enter. The incubator deals with the initial stages of R&D, a stage that is difficult to fund without government support. In addition, public incubators protect the interests of the initiators in project management, without having their own interests to protect. Incubator managers feel that the private sector cannot serve as a substitute to public programs, since the private market only deals with certain fields, while incubators are capable of accommodating a large number of projects, in a wide variety of fields, and with extensive budget flexibility. Unlike the private sector, government programs can make long-term plans, thus promote projects that seem unattractive during their initial stages. Another justification for the program is that incubators deal

with a unique population that in most cases cannot materialize their ideas via other means.

According to the assessment given by the incubator managers, the Israeli model of the technological incubator program is currently in an advanced stage, compared with similar program in some other European countries. They claim that the program has provided opportunity for many projects, in the hi-tech industry and encouraging the creation of entrepreneurships. Additional advantages mentioned are the efficiency of the program, as well as high success rates among the graduating projects.

Chapter 2: Survey of Project Initiators (N=109)

2.1 Description of Project Initiators

This chapter reports on an analysis of the data collected from a sample of 109 project initiators. The projects constituted more than 50% of the total number of projects operating in the framework of the 21 surveyed incubators. Close to 90 percent of the project initiators were male (Table 27); 50 percent were Israeli born, and 33 percent residents of the former USSR (Table 28); 63 percent possessed a Ph.D. degree and 21 percent a Master's degree (Table 29).

Table 27: Distribution of Project Initiators, by Sex

Sex	Number	Percentage
Male	156	89%
Female	20	11%
Total	176	100%

Table 28: Project Initiators by Place of Origin

Place of origin	Number	Percentage
Israel	87	49%
Former USSR	58	33%
USA, Australia, West Europe	9	5%
Eastern Europe	10	6%
North America	6	3%
South America	6	3%
Total	176	100%

In the distribution of the entrepreneurs according to education levels, it was found that a high percentage of them had high education levels. 63% held PhD degrees, and an additional 21% held Masters degrees (see table 29). Their major fields of formal education were engineering and natural science, 40% and 38% respectively (table 30). More than two-thirds of the initiators came from an academic/research institute or from industrial R&D departments, almost equally divided between the two types of places of work (Figure 5).

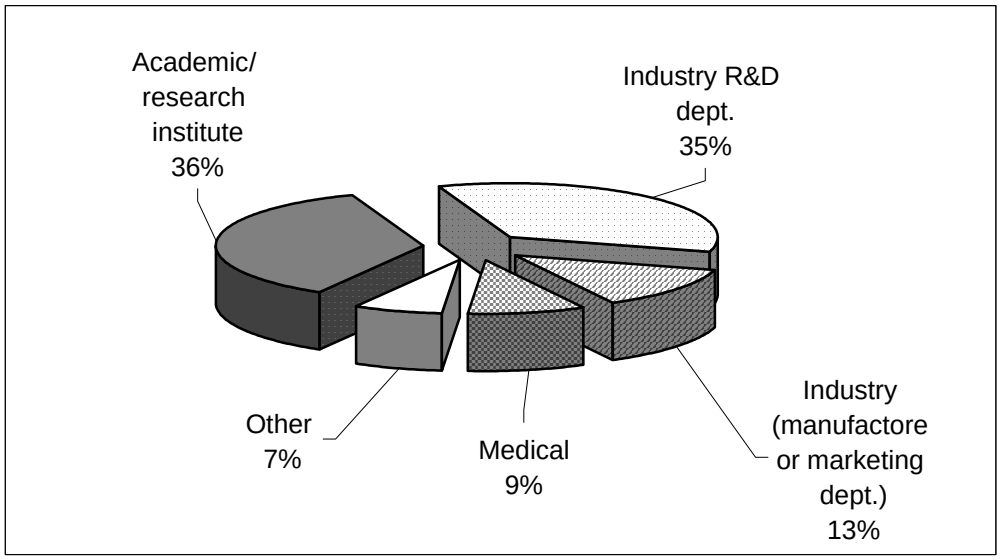
Table 29: Project Initiators, by Level of Educational

Education	Number	Percentage
Non-academic	3	2%
Military program	0	0%
Practical engineers	7	4%
Bachelor's degree	19	11%
Master's degree	37	21%
Ph.D.	110	63%
Total	176	100%

Table 30: Project Initiators, by Main Field of Discipline

Field of Education	Number	Percentage
Engineering	70	40%
Life Science	66	38%
Exact Science	26	15%
Management/Economic	13	7%
Software	1	1%
Total	176	100%

Figure 5: Project Initiators, by Previous Place of Work



The distribution of projects by area of activity is shown in Table 31. Perhaps the most notable relationship can be found between the biotechnology, drugs, and medical equipment fields and project initiators who came from academic and research institutions. On the other hand, mechanical engineering and software project initiators predominantly arrived from an R&D department in industry.

Table 31: Distribution of Initiators, by Project Field and Previous Place of Work

Field	All Incubators		Industry R&D		Academic/Research		Other	
	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Drugs	12	11.0	2	5.7	8	22.9	2	5.1
Medical equipment	17	15.6	1	2.9	6	17.1	10	25.6
Chemicals and raw materials	12	11.0	3	8.6	3	8.6	6	15.4
Mechanical engineering	14	12.8	7	20.0	2	5.7	5	12.8
Hardware, communication, and electronic components	7	6.4	4	11.4	1	2.9	2	5.1
Optical and precision equipment	8	7.3	3	8.6	2	5.7	3	7.7
Biotechnology	17	15.6	4	11.4	9	25.7	4	10.3
Energy and ecology	12	11.0	5	14.3	2	5.7	5	12.8
Software	10	9.2	6	17.1	2	5.7	2	5.1
Total	109	100.0	35	100.0	35	100.0	39	100.0

As for the preferred location after graduating from an incubator, one third of the project initiators interviewed chose a metropolitan region. This proportion increased to 38% for projects already located in a metropolitan region. Likewise, 35% of the projects already located in peripheral incubators preferred to locate in a peripheral region after graduation. These statistics point to the affinity that projects have to current location (Table 32). It is fair to assume that the development of new companies and the creation of new jobs will impact the local economy.

Table 32: Preferred Location of Project After Graduation, by Region

Location	Total		Metropolitan region		Intermediate region		Peripheral region	
	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Renting within the incubator	23	21.1	9	19.1	8	36.4	6	15.0
Near the incubator	7	6.4	3	6.4	1	4.6	3	7.5
Near a university	19	17.4	12	25.5	2	9.1	5	12.5
Metropolitan region	35	32.1	18	38.3	5	22.7	12	30.0
Peripheral region	25	22.9	5	10.6	6	27.3	14	35.0
Total	109	100.0	47	100.0	22	100.0	40	100.0

In the following questions, the initiators were asked where their ideas grew and what the work environment was like there. Analysis of the responses indicates that 78% of the ideas stemmed in Israel, while only 22% were brought in from abroad (table 33). Half of the ideas came from academic/research institutes, 23% from industrial sources and 16% from hi-tech work (table 34).

Table 33:Projects by Origin of Idea

Origin of Idea	Number	Percentage
Israel	85	78%
Abroad	24	22%
Total	109	100%

Table 34: Project Initiators, by Work Environment of Idea

Work Environment of Idea	Number	Percentage
Academic/research institute	70	40%
High-Tech Industry	66	38%
Industry (manufacture)	26	15%
Medicine	13	7%
Agriculture	1	1%
Total	176	100%

2.2 Reasons for Choosing a Specific Incubator

Project initiators were given sixteen reasons for choosing an incubator. The scale used to score these questions ranged from 1=unimportant to 3=very important. Three reasons emerged as highly important: close to place of residence (2.68), acquaintance with the incubator manager (2.28), and an area with a good potential (2.12). The reasons that received the lowest scores were near former place of work (1.04), salary (1.11), and incubator solicitation (1.14). (Table 35).

Table 35: Reasons for Choosing an Incubator

Reasons	Score	Std. Deviation
Close to place of residence	2.68	1.56
Acquaintance with the incubator manager	2.28	1.63
Area with a good potential	2.12	1.39
Prestige of the incubator	2.03	1.32
Fast acceptance	2.01	1.73
Close to university	1.93	1.44
Expertise	1.72	1.20
Identical projects in incubator	1.59	1.21
Team	1.57	1.39
Financial conditions	1.39	1.17
Similar projects successfully graduated from the incubator	1.36	0.82
Former incubator employee	1.24	0.92
University collaboration	1.22	0.92
Incubator initiated	1.14	0.71
Salary	1.11	0.66
Near former place of work	1.04	0.38
Number of projects	109	

The main reason for selecting a particular incubator was, as mentioned, proximity to one's place of residence. The importance of the other reasons varied according to project location (Table 36). Project initiators located in an incubator within a metropolitan region gave high scores to an area with a good potential for success (2.57) and to the "status" of the incubator (2.55). For initiators located in intermediate and peripheral regions, proximity to place of residence ranked number one, but acquaintance with the incubator managers scored as the second most important reason (2.23 in the intermediate regions and 2.28 in the peripheral regions).

Proximity to a university and the "status" of the incubator seem to be important for projects initiators located in metropolitan regions. It was far less important for those located in the intermediate and peripheral regions. The results of the Mann-Whitney test indicated significant statistical differences between the metropolitan regions and the other regions with regard to the importance placed on factors such as: creating a prestigious image for the incubator (the average ranking given by initiators from metropolitan region was 2.55 compared with 1.77 in the intermediate regions and 1.55 in the periphery), proximity to universities (initiators from metropolitan regions – 2.43, intermediate regions – 1.45, and the periphery – 1.6), and a region with potential for ongoing activity (initiators from metropolitan regions – 2.57, intermediate regions – 2.09, and the periphery – 1.6).

Additional differences were found with regard to the importance placed on the factors "improved financial conditions" and "one of the people involved in the project is/was employed in the incubator". Initiators in the periphery ranked the first factor higher than initiators operating in the metropolitan regions (1.47 and 1.09 respectively). The second factor was ranked higher by initiators operating in the metropolitan regions than those operating in the peripheral regions (1.06 and 0.0 respectively).

When projects are being classified by type there is one item "close to place of residence" that stand out as important for both type. However this item is very important for projects located in general type incubators (3.12) while the average score given to this item by projects located in specialized type incubators, although the highest is significantly different from is counterpart (2.40). (Table 37).

When projects are classified by fields of activity, the important of proximity to place of residence emerge again as the major reason for selecting the particular incubator. For drugs project, similar projects within the incubator are also important. On the other hand, initiators of medical equipment project value highly acquaintance with the incubator's manager, while initiators of energy and ecology projects put premium on fast admission to the incubator. This preference by the latter can explain the relatively high rate of projects from this field in the peripheral areas. It is worth noting the importance attached by the biotechnology as well as to the drugs and medical equipment projects to the proximity to the university. This result is probably due to the linkage between these fields and existing research laboratories working in these fields in nearby universities, an infrastructure the incubators cannot provide. Such

proximity was no very important for other projects. Another reason that received a high score by project's initiators is a potentially good area for future development. Other reasons that received moderately high score are the "status" of the incubator and acquaintance with the incubator's manager (Table 1 in Appendix 2).

Table 36: Project Initiators' Reasons for Choosing an Incubator, by Location

Reasons	Location									Mann-Whitney U-test		
	Metropolitan region			Intermediate region			Peripheral region			z	z	z
	Rank	Score	Std. Deviation	Rank	Score	Std. Deviation	Rank	Score	Std. Deviation	Metropolitan & Intermediate region	Metropolitan & Peripheral region	Peripheral & Intermediate region
Close to place of residence	1	2.70	1.44	1	2.86	1.42	1	2.55	1.77	-0.46	-0.64	-0.81
Area with a good potential	2	2.57	1.44	3	2.09	1.31	5	1.60	1.19	-1.34	-3.56**	-1.60
Prestige of the incubator	3	2.55	1.49	5	1.77	1.15	7	1.55	0.96	-2.15**	-3.32**	-0.69
Close to university	4	2.43	1.63	7	1.45	0.96	5	1.60	1.26	-2.46**	-2.69**	-0.13
Acquaintance with the incubator manager	5	2.30	1.63	2	2.23	1.66	2	2.28	1.66	-0.21	-0.09	-0.12
Fast acceptance	6	1.89	1.66	4	1.91	1.72	3	2.20	1.86	-0.02	-0.76	-0.61
Expertise	6	1.89	1.37	6	1.55	0.96	4	1.63	1.10	-0.69	-0.79	0.00
Identical projects in incubator	7	1.79	1.40	9	1.27	0.94	8	1.53	1.09	-1.82*	-0.69	-1.40
Team	8	1.64	1.45	4	1.91	1.72	10	1.30	1.07	-0.61	-1.30	-1.70*
Similar projects successfully graduated from the incubator	9	1.36	0.74	9	1.27	0.94	9	1.40	0.87	-1.10	-0.04	-1.01
University collaboration	10	1.34	1.13	10	1.18	0.85	12	1.10	0.63	-0.59	-1.19	-0.43
Financial conditions	11	1.09	0.58	6	1.55	1.41	4	1.65	1.46	-1.89*	-2.45**	-0.36
Near former place of work	11	1.09	0.58	11	1.00	0.00	13	1.00	0.00	-0.68	-0.92	0.00
Salary	11	1.09	0.58	8	1.36	1.18	13	1.00	0.00	-1.31	-0.92	-1.92*
Former incubator employee	12	1.06	0.44	11	1.00	0.00	6	1.58	1.39	-0.68	-2.23**	-1.90*
Incubator initiated	13	1.00	0.00	10	1.18	0.85	11	1.28	0.99	-1.46	0.06*	-0.43
Number of projects	47			22			40					

*Significant at the 0.1 level,
** Significant at the 0.05 level.
Spearman's rho:
Between metropolitan & intermediate region r_s= 0.790, sig.=0.000
Between metropolitan & peripheral region r_s= 0.615, sig.=0.011
Between peripheral & intermediate region r_s= 0.713, sig.=0.00

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Table 37: Project Initiators Reasons for Choosing an Incubator, by Incubator Type

Subject	General type			Specialized type			Mann-Whitney U-test
	Rank	Score	Std. Deviation	Rank	Score	Std. Deviation	Z
Close to place of residence	1	3.12	1.56	1	2.40	1.50	-2.37**
Acquaintance with the incubator manager	2	2.40	1.55	4	2.19	1.69	-0.91
Area with a good potential	3	1.95	1.27	3	2.22	1.45	-0.84
Prestige of incubator	4	1.86	1.12	6	2.13	1.43	-0.68
Team	4	1.86	1.66	10	1.39	1.17	-1.61
Expertise	5	1.76	1.16	7	1.70	1.23	-0.65
Identical projects in incubator	6	1.62	1.21	8	1.57	1.22	-0.38
Fast acceptance	7	1.57	1.42	2	2.28	1.87	-2.12**
Former incubator employee	8	1.55	1.37		1.04	0.37	-2.67**
Close to university	9	1.52	1.04	5	2.18	1.59	-1.95*
Incubator initiate	10	1.36	1.12	15	1.00	0.00	-2.56**
Similar projects successfully graduate from the incubator	11	1.33	0.85	11	1.37	0.81	-0.67
Financial conditions	12	1.29	1.04	9	1.45	1.25	-0.79
University collaboration	13	1.19	0.86	12	1.24	0.95	-0.27
Salary	14	1.10	0.62	13	1.12	0.69	-0.19
Near former place of work	14	1.00	0.00	14	1.06	0.49	-0.79
Number of projects	47			62			

*. Significant at the 0.1 level.
**. Significant at the 0.05 level.
Spearman's rho:
Between specialized & general incubator r_s= 0.721, sig.=0.002

2.3 Source of Funding

The highest annual average budget per project is found in the intermediate region ($315,000), and the lowest in peripheral regions ($190,750). It can be observed that the share of the Office of the Chief Scientist (OCS) in a project's budget decreases with the increase in the average budget of a project. Therefore, OCS share in the peripheral regions reaches 81.1%, while in the intermediate regions it drops to 48.8%. This decline in the intermediate regions is due to the high rate of funding originating from product sales. However, it should be noted that this relates to one specific project located in the intermediate region, which developed and sold a product to the industrial sector, while still operating within the incubator. With the exclusion of this one project, the average rate of funding by the Chief Scientist for projects in incubators located in the intermediate region would have been 64.1%.

Another important observation is the share of venture capital in a project's average budget according to region. The highest share is in metropolitan regions (11.2%), and the lowest is in peripheral regions (3.1%). This phenomenon can be associated with the degree of risk to the investment in each region (Table 38 and Figure 6).

Table 38: Projects' Source of Funding, by Location

Source of Funding	Total	Metropolitan region	Intermediate region	Peripheral region
Total budget per project in US$	236,009	237,553	315,000	190,750
Chief Scientist's Office	64.6%	63.2%	48.8%	81.1%
Incubator / Sponsor	2.4%	3.1%	2.4%	1.4%
Venture capital / investment company	7.5%	11.2%	6.2%	3.1%
"Angels"	5.9%	5.9%	7.7%	4.3%
Strategic partner	10.9%	12.4%	11.7%	8.0%
Initiator / family	2.6%	4.2%	1.0%	1.8%
Sales	4.7%	0.0%	17.3%	0.0%
Research / international funds	1.4%	0.0%	4.9%	0.4%
Number of projects	109	47	22	40

It is interesting to note that the share of the OCS in the budget of projects sponsored by specialized types of incubators is comparatively considerably high, 68.4% (Table 39).

This finding seems to stand contrary to expectations that specialization will contribute to the ability of projects to obtain funding from external sources. Here too, it was due

to one specific project operating from a general incubator that tipped the scale as to the average funding provided by the Chief Scientist to general incubators. When the effect of this project is neutralized, the average funding for general incubators from the Chief Scientist reaches 70.1%, slightly higher than the average for specialized incubators. With the exclusion of this project, the average budget per project in general incubators would only be $217,664, similar to that in the specialized incubators.

Figure 6: Projects' Source of Funding, by Location

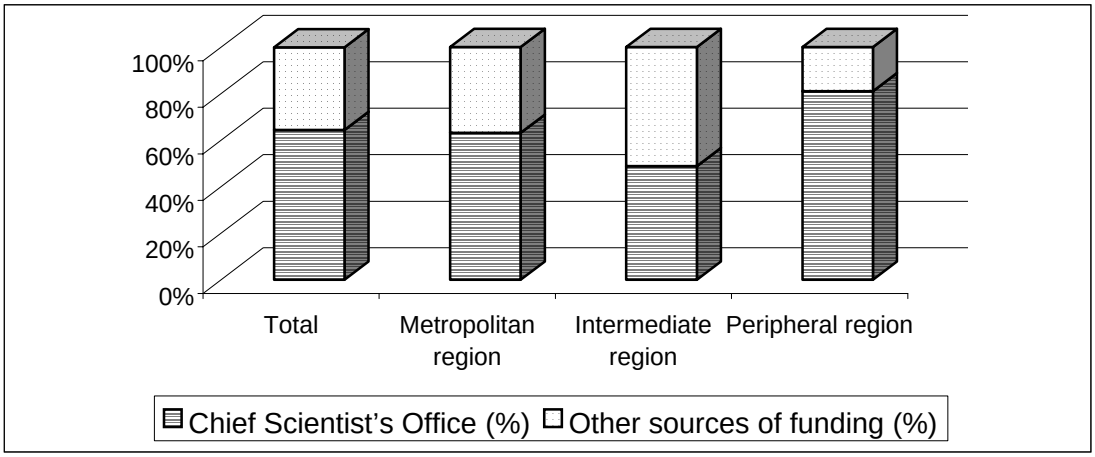

Table 39: Projects' Source of Funding, by Incubator Type

Sources of funding	Total	General Type	Specialized Type
Total budget per project in US $	236,009	254,043	222,339
Chief Scientist's Office	64.6%	60.2%	68.4%
Incubator / sponsor	2.4%	1.5%	3.2%
Venture capital / investment company	7.5%	5.1%	9.5%
"Angels"	5.9%	7.5%	4.5%
Strategic partner	10.9%	8.7%	12.8%
Initiator / family	2.6%	4.0%	1.4%
Sales	4.7%	10.0%	0.0%
Research / international funds	1.4%	2.9%	0.2%
Number of incubators	109	47	62

When we analyzed the projects' sources of funding by field of activities, we found that projects in mechanical engineering, drugs, and biotechnology received 77.4%, 73.2%, and 73.2% respectively, of their budgets from the OCS. The share of the budget received from a strategic partner was relatively high in two fields: medical equipment and energy and ecology – both 30.3% (Table 40).

Table 40: Projects' Sources of Funding, by Field

Sources of Funding	Total	Drugs	Medical Equipment	Chemicals and Raw Materials	Mechanical Engineering	Hardware, Communica-tion, and Electronic Components*	Optical and Precision Equipment	Biotechnology	Energy and Ecology	Software
Total budget per project in US$	236,009	208,750	259,412	217,083	190,714	450,000	178,125	205,294	180,833	330,000
Chief scientist's Office	64.6%	73.2%	58.4%	69.8%	77.4%	36.4%	64.6%	73.2%	58.4%	69.8%
Incubator / sponsor	2.4%	4.5%	1.8%	0.0%	2.3%	1.3%	2.4%	4.5%	1.8%	0.0%
Venture capital / investment company	7.5%	15.0%	6.3%	13.1%	6.9%	0.0%	7.5%	15.0%	6.3%	13.1%
"Angels"	5.9%	4.0%	1.4%	4.8%	8.1%	5.7%	5.9%	4.0%	1.4%	4.8%
Strategic partner	10.9%	2.2%	30.3%	10.7%	1.9%	17.8%	10.9%	2.2%	30.3%	10.7%
Initiator / family	2.6%	1.1%	1.2%	1.6%	3.3%	0.9%	2.6%	1.1%	1.2%	1.6%
Sales	4.7%	0.0%	0.0%	0.0%	0.0%	38.0%	4.7%	0.0%	0.0%	0.0%
Research / international funds	1.4%	0.0%	0.6%	0.0%	0.0%	0.0%	1.4%	0.0%	0.6%	0.0%
Number of projects	109	12	17	12	14	7	8	17	12	10

* Statistics in this field are highly skewed because of one specific project that is already selling.

2.4 Level of Satisfaction with the Incubator Support System

Some of the questions during the interviews with the project initiators dealt with the level of satisfaction from a list of variables that were hypothesized to be detrimental to the successful operation of the projects. Eighteen such variables were presented separately to the project initiators, who were asked give a score on a scale of 1 to 5 (1 = lowest satisfaction, and 5 = highest satisfaction) indicating their level of satisfaction from each of these variables.

First, the initiators' overall satisfaction with these variables was solicited; next, differences in the levels of their satisfaction were examined according to incubator location and type. The relationships of the levels of satisfaction with the sub-groups were tested with Spearman correlation coefficients.

Finally, an examination of the differences in project initiators' level of satisfaction, according to the fields in which they operate, was carried out. The purpose of the examination was to find out whether projects from a certain field enjoy higher-level service in specific topics, which might result from unique and specific needs related to the field.

Table 41 presents the levels of satisfaction with the support received from the technological incubator program. The five items that received the highest score were available suitable space (3.72), legal counseling (3.46), IPR protection (3.43), management support (3.43), and financial support (3.36). At the other end of the scale were advanced studies and re-training (2.46), source of technological information (2.56), and marketing (2.74). Nevertheless, even these latter scores are not very low in absolute terms.

Table 41 : Project Initiators' Level of Satisfaction with Incubator Support System

Subjects	Mean	Std. Deviation
Available suitable space	3.72	1.14
Legal counseling	3.46	1.19
IPR Protection	3.43	1.19
Management support	3.43	1.15
Financial support	3.36	1.01
Strategic counseling	3.11	1.17
Access to labor pool	3.06	1.17
Links to financial sources	3.04	1.22
Connections with suppliers	3.04	1.14
Networking with strategic partners	2.98	1.07
Networking of plants	2.94	1.13
Professional network	2.90	1.22
Access to inputs	2.85	1.29
Market information	2.81	1.11
International collaborators	2.80	1.12
Marketing	2.74	1.14
Source of technological information	2.56	1.23
Advanced studies and re-training	2.46	1.22
Number of projects	109	

The greatest differences in the scores when observed according to location were found between projects located in the metropolitan incubators and those located in geographically intermediate and peripheral incubators. The Spearman's rho between these pairs of regions was relatively low, albeit statistically significant (r_s= 0.665, sig.=0.003) (Table 42).

The level of satisfaction derived from available suitable space received the highest score in the metropolitan and peripheral regions, 3.89 and 3.80, respectively. In the intermediate regions, management support received the highest score, 3.45. An even higher score for management support was given by project initiators in the peripheral regions (3.70).

Table 42: Project Initiators' Levels of Satisfaction with Incubator Support, by Location

Subject	Location								
	Metropolitan region			Intermediate region			Peripheral region		
	Rank	Score	Std. Deviation	Rank	Score	Std. Deviation	Rank	Score	Std. Deviation
Available suitable space	1	3.89	1.07	2	3.23	1.19	1	3.80	1.14
Legal counseling	2	3.60	1.06	6	2.77	1.23	4	3.68	1.21
Access to inputs	3	3.51	1.18	13	2.32	0.99	17	2.38	1.23
IPR Protection	4	3.47	1.04	5	2.86	1.39	2	3.70	1.16
Financial support	5	3.38	1.07	3	3.18	1.10	5	3.43	0.90
Management support	6	3.19	1.15	1	3.45	1.26	3	3.70	1.04
Connections with suppliers	7	3.15	1.02	5	2.86	1.13	11	3.00	1.28
Access to labor pool	8	3.04	1.22	6	2.77	0.92	7	3.25	1.24
Strategic counseling	8	3.04	1.22	4	2.91	1.19	6	3.30	1.09
Links to financial sources	8	3.04	1.28	7	2.73	1.24	8	3.20	1.11
Networking of plants	8	3.04	1.18	9	2.64	1.18	12	2.98	1.05
Networking with strategic partners	9	3.02	1.17	6	2.77	1.11	10	3.05	0.93
Professional network	10	2.89	1.31	10	2.59	1.01	9	3.08	1.23
International collaborators	11	2.81	1.26	9	2.64	1.22	14	2.88	0.88
Market information	12	2.72	1.12	8	2.68	1.13	12	2.98	1.10
Marketing	13	2.70	1.12	11	2.55	1.30	13	2.90	1.08
Source of technological information	14	2.47	1.25	14	2.27	1.20	15	2.83	1.20
Advanced studies and re-training	15	2.40	1.10	12	2.36	1.22	16	2.58	1.38
Number of projects	47			22			40		

*Significant at the 0.1 level.
** Significant at the 0.05 level.
Spearman's rho:
Between metropolitan & intermediate region r_s= 0.636, sig.=0.005
Between metropolitan & peripheral region r_s= 0.665, sig.=0.003
Between peripheral & intermediate region r_s= 0.880, sig.=0.000

In comparing the project initiators' levels of satisfaction by incubator type, we found no statistically significant differences between the two groups of incubators. Project initiators in specialized-type incubators were more satisfied with legal counseling services than were their counterparts in general-type incubators; 3.76 and 2.98 respectively. In both types of incubators, project initiators gave a relatively high score to management support, IPR protection and financial support (Table 43).

Table 43: Project Initiators' Levels of Satisfaction with Incubator Support, by Incubator Type

Subject	General Type			Specialized Type			Mann-Whitney U-test
	Rank	Score	Std. Deviation	Rank	Score	Std. Deviation	Z
Available suitable space	1	3.83	0.91	2	3.66	1.26	-0.32
Management support	2	3.50	0.99	5	3.39	1.24	-0.34
IPR Protection	3	3.36	1.23	3	3.48	1.17	-0.44
Financial support	4	3.26	0.94	4	3.42	1.06	-1.05
Links to financial sources	5	3.10	1.14	9	3.00	1.27	-0.48
International collaborators	6	3.02	1.05	15	2.66	1.15	-1.80*
Strategic counseling	7	3.00	1.06	7	3.18	1.23	-0.84
Networking with strategic partners	7	3.00	0.91	10	2.97	1.17	-0.04
Legal counseling	8	2.98	1.18	1	3.76	1.10	-3.41**
Access to labor pool	8	2.98	1.07	8	3.12	1.24	-0.63
Networking of plants	9	2.93	0.97	11	2.94	1.23	-0.05
Connections with suppliers	9	2.90	1.21	8	3.12	1.09	-0.84
Professional network	10	2.86	1.16	12	2.93	1.27	-0.30
Advanced studies and re-training	11	2.74	1.25	17	2.28	1.18	-1.95*
Market information	11	2.74	1.01	13	2.85	1.17	-0.34
Marketing	12	2.71	1.15	14	2.76	1.14	-0.28
Source of technological information	13	2.62	1.23	16	2.52	1.24	-0.54
Access to inputs	14	2.31	1.28	6	3.19	1.18	-3.46**
Number of projects	47			62			

* Significant at the 0.1 level.
** Significant at the 0.05 level.
Spearman's rho:
Between specialized & varied incubator r_s= 0.595, sig.=0.009

In general, a great deal of similarity exists between projects belonging to different fields of activity. The overwhelming number of projects was satisfied with available suitable space. Initiators of medical equipment projects were highly satisfied with the financial support (4.00). A large number of initiators expressed a low level of satisfaction from advanced studies and re-training as well as source of technological information (Table 2 in Appendix 2). Project initiators from the field of chemistry and new materials demonstrated the lowest levels of satisfaction with regard to accessibility to input sources, while project initiators dealing in biotechnology ranked marketing quite low.

2.5 Factors Contributing to Successful Projects

The interviews with the project initiators also posed questions concerning the relative importance of variables that we hypothesized to be detrimental to the successful operation of a project after "graduation". Eighteen such variables were presented separately to the project initiators, who were asked to give a score on a scale of 1 to 5 (1 = very unimportant; 5 = very important) indicating the relative level of importance of each variable to the successful operation of a project.

First, we analyzed the data obtained for the entire sample. Five factors received high scores: financial support (4.68), links to financial sources (4.42), marketing (4.17), international collaboration (4.15), and networking with a strategic partner (4.08). The lowest scores were given to connections with supplier (2.27), available suitable space (2.31), and access to inputs (2.45) (Table 44).

Table 44: Factors Affecting the Initiation of a Project

Factors	Score	Std. Deviation
Financial support	4.68	0.59
Links to financial sources	4.42	0.80
Marketing	4.17	1.14
International collaborators	4.15	1.00
Networking with strategic partners	4.08	1.05
Strategic counseling	3.47	1.42
Legal counseling	3.35	1.42
IPR Protection	3.32	1.51
Market information	3.31	1.41
Networking of plants	3.10	1.25
Professional network	2.82	1.27
Source of technological information	2.78	1.21
Management support	2.74	1.39
Access to labor pool	2.63	1.45
Advanced studies and re-training	2.52	1.28
Available suitable space	2.31	1.29
Connections with suppliers	2.27	1.27
Access to inputs	2.08	1.28
Number of projects	109	

In the second stage, we classified the projects by location and incubator type. A high correlation exists between any pair of regions as can be observed from the Spearman coefficients. These correlations are statistically significant. For all regions, the most important factors are financial support, links to financial sources, marketing, international collaborations, and networking with strategic partners (Table 3 in Appendix 2).

As far as the correlation between incubator type and the list of 18 factors, a very high Spearman rank order correlation coefficient was found here too. The most important factors, those receiving a high score of 4.0 or above, were the same ones as found for location (Table 45).

When we classified the projects by field of activity, we observed a very close rank order to that found with respect to location and incubator type; namely, financial support, links to financial sources, international collaboration, networking with a strategic partner, and marketing. These factors received a high score of 4.0 or above in all or most of the fields (Table 4 in Appendix 2).

Table 45: Factors Affecting the Initiation of a Project, by Incubator Type

Factors	General Type			Specialized Type			Mann-Whitney U-test
	Rank	Score	Std. Deviation	Rank	Score	Std. Deviation	Z
Financial support	1	4.69	0.52	1	4.67	0.64	-0.23
Links to financial sources	2	4.43	0.89	2	4.42	0.74	-0.44
Marketing	3	4.05	1.23	3	4.24	1.09	-0.86
Networking with strategic partners	3	4.05	1.19	5	4.10	0.96	-0.24
International collaborators	4	4.02	1.16	4	4.22	0.88	-0.61
Market information	5	3.64	1.46	10	3.10	1.34	-2.24**
IPR Protection	6	3.62	1.48	9	3.13	1.51	-1.70*
Legal counseling	7	3.52	1.44	7	3.24	1.40	-1.27
Strategic counseling	8	3.43	1.45	6	3.49	1.42	-0.18
Source of technological information	9	3.02	1.28	12	2.63	1.15	-1.67*
Networking of plants	10	2.90	1.23	8	3.22	1.25	-1.31
Management support	11	2.79	1.22	13	2.72	1.50	-0.35
Advanced studies and re-training	11	2.79	1.30	15	2.36	1.25	-1.71*
Access to labor pool	12	2.76	1.45	14	2.55	1.46	-0.82
Professional network	13	2.71	1.15	11	2.88	1.34	-0.68
Connections with suppliers	14	2.38	1.08	17	2.19	1.37	-1.24
Access to inputs	15	2.31	1.41	18	1.94	1.19	-1.28
Available suitable space	16	2.29	1.20	16	2.33	1.35	-0.04
Number of projects	47			62			

* Significant at the 0.1 level.
** Significant at the 0.05 level.
Spearman's rho:
Between specialized & varied incubator r_s=0.917, sig.=0.000

Chapter 3: Comparison between Incubator Managers and Project Initiators

3.1 Barriers and Support Factors

Incubator managers listed two factors as being detrimental: limited funding and deficiency in management knowledge. In fact, they consider the absence of these two factors as retarding success. Project initiators concur with this opinion. However, their level of satisfaction with these two services as provided by the incubators is only moderately high. That is, these services should be improved (Table 46).

Table 46: Factors and Barriers to and Support of an Incubator's Operation According to Incubator Mangers and Project Initiators

Barriers and limitations / Subjects of support	Barriers Factors Listed by Incubator Managers		Level of Satisfaction of Project Initiators	
	Score	Std. Deviation	Score	Std. Deviation
Limited funding / Financial support	4.10	1.00	3.36	1.01
Deficiency in management Knowledge/ Management support	4.00	1.14	3.43	1.15
Deficiency in marketing knowledge/ Marketing	3.67	1.24	2.74	1.14
Inadequate space/ Available suitable space	1.81	1.08	3.72	1.14
Limited access to professional labor / Professional network	1.76	1.51	2.90	1.22

The comparison of the degree of importance of the limiting factors as expressed by incubator managers and the level of satisfaction with these factors expressed by project initiators does not revel any noticeable pattern (Table 47). Although the physical factor (available suitable space) was ranked relatively unimportant, it was usually ranked highest on the satisfaction levels. With regard to the other factors surveyed, many similarities were found. In general, project initiators are quite satisfied with factors that incubator managers identified as very important (Table 48).

Table 47: Factors and Barriers to and Support of an Incubator's Operation by Incubator Mangers and Project Initiators and by Location

Barriers and limitations / Subjects of support	Metropolitan region				Intermediate region				Peripheral region			
	Incubator Managers		Project Initiators		Incubator Managers		Project Initiators		Incubator Managers		Project Initiators	
	Score	S.D.	Score	S.D.	Score	S.D.	Score	S.D.	Score	S.D.	Score	S.D.
Limited funding / Financial support	4.44	0.73	3.38	1.07	3.2	1.30	3.18	1.10	4.29	0.76	3.43	0.90
Deficiency in management knowledge/ Management support	4.22	1.09	3.19	1.15	3.8	1.64	3.45	1.26	3.86	0.90	3.70	1.04
Deficiency in marketing knowledge/ Marketing	3.22	1.56	2.70	1.12	4.6	0.55	2.55	1.30	3.57	0.79	2.90	1.08
Inadequate space/ Available suitable space	1.56	0.88	3.89	1.07	1.2	0.45	3.23	1.19	2.57	1.27	3.80	1.14
Limited access to professional labor / Professional network	1.56	1.33	2.89	1.31	1.8	1.79	2.59	1.01	2.00	1.73	3.08	1.23
Number of incubators/projects	9		47		5		22		7		40	

Table 48: Factors and Barriers to and Support of to an Incubator's Operation by Incubator Mangers and Project Initiators and by Incubator Type

Barriers and limitations / Subjects of support	General type				Specialized type			
	Incubator Managers		Project Initiators		Incubator Managers		Project Initiators	
	Score	S.D.	Score	S.D.	Score	S.D.	Score	S.D.
Limited funding / Financial support	4.14	0.90	3.26	0.94	3.93	1.27	3.42	1.06
Deficiency in management knowledge/ Management support	3.71	1.11	3.50	0.99	4.29	0.91	3.39	1.24
Deficiency in marketing knowledge/ Marketing	3.43	1.40	2.71	1.15	3.79	1.19	2.76	1.14
Inadequate space/ Available suitable space	2.00	1.73	3.83	0.91	1.64	1.45	3.66	1.26
Limited accessibility to professional labor / Professional network	1.43	0.79	2.86	1.16	2.00	1.18	2.93	1.27
Number of incubators/projects	8		47		13		62	

3.2 Level of Satisfaction

The ranking of the score given by incubator mangers and project initiators to their level of satisfaction from each of the 18 factors yielded a very similar rank order. The factors that received the highest scores were in descending order as follows: available suitable space, legal counseling, IPR protection, management support, and strategic counseling. Overall we can say that incubator management expressed a slightly higher level of satisfaction than did project initiators. Nevertheless, the rank order of the factors given by each group is very similar (Table 49).

Table 49: Comparison of the Level of Satisfaction derived by Incubator Managers and Project Initiators from Elements of the Technological Incubator Program

Element	Incubator Managers		Project Initiators	
	Score	Std. Deviation	Score	Std. Deviation
Available suitable space	3.81	0.98	3.72	1.14
Legal counseling	3.81	1.17	3.46	1.19
IPR Protection	3.67	1.20	3.43	1.19
Management support	3.67	0.97	3.43	1.15
Strategic counseling	3.52	1.17	3.11	1.17
Market information	3.48	1.03	2.81	1.11
Connections with suppliers	3.33	1.24	3.04	1.14
Access to inputs	3.29	0.90	2.85	1.29
International collaborators	3.24	1.22	2.80	1.12
Professional network	3.19	0.81	2.90	1.22
Networking of plants	3.19	0.98	2.94	1.13
Source of technological information	3.14	1.20	2.56	1.23
Networking with strategic partners	3.10	1.00	2.98	1.07
Financial support	3.00	1.26	3.36	1.01
Marketing	2.81	1.12	2.74	1.14
Links to financial sources	2.76	1.30	3.04	1.22
Access to labor pool	2.67	1.11	3.06	1.17
Advanced studies and re-training	2.52	0.87	2.46	1.22
Number of incubators / projects	21		109	
Spearman's rho:	r_s=0.583, sig.=0.011			

When we analyzed the level-of-satisfaction scores of incubator mangers and project initiators, one item in particular was not consistent with the scoring given by the two groups: international collaboration. By and large, incubator managers gave a much higher score to that item than did project initiators. It should be noted that the score given to that item by incubator managers in peripheral regions was, however, significantly low. High levels of satisfaction from accessibility to inputs were found among incubator managers, as well as project initiators, in the metropolitan regions. This was not the case in the intermediate regions and in the periphery (Table 50).

Satisfaction from intellectual property rights protection was high among incubator managers in the intermediate regions and in the periphery, but not in metropolitan regions. Project initiators in the periphery expressed higher levels of satisfaction than in other areas, with regard to IPR protection.

Few similarities in satisfaction levels were found between incubator managers and project initiators, with regard to various factors examined in the survey. This finding

is expressed in the relatively low correlation coefficient found in the pairings examined between all three regions.

The variations in the scores between incubator managers and project initiators in the general type of incubators, is significantly higher than in specialized incubators. Project initiators also gave a higher value to the same item than managers of specialized-type incubators. By and large, there is little variation in the scores given to level of satisfaction between incubator mangers and project initiators of specialized-type incubators. A far greater difference exists between incubator managers and project initiators of general-type incubators. The former group consistently assigned a higher value to each of the items (Table 51). This means that agreement levels were found to be higher among incubator managers and project initiators in specialized incubators, compared with general incubators.

Table 50: Comparison of the Level of Satisfaction Derived by Incubator Managers and Project Initiators from Elements of the Technological Incubator Program, by Location

Element	Metropolitan region				Intermediate region				Peripheral region			
	Incubator Managers		Project Initiators		Incubator Managers		Project Initiators		Incubator Managers		Project Initiators	
	Score	S.D.	Score	S.D.	Score	S.D.	Score	S.D.	Score	S.D.	Score	S.D
Management support	3.89	0.60	3.19	1.15	3.60	1.52	3.45	1.26	3.43	0.98	3.70	1.04
International collaborators	3.67	1.22	2.81	1.26	3.20	1.30	2.64	1.22	2.71	1.11	2.88	0.88
Access to inputs	3.56	0.53	3.51	1.18	3.20	0.84	2.32	0.99	3.00	1.29	2.38	1.23
Legal counseling	3.56	1.59	3.60	1.06	4.20	0.45	2.77	1.23	3.86	0.90	3.68	1.21
Available suitable space	3.44	0.88	3.89	1.07	4.00	0.71	3.23	1.19	4.14	1.21	3.80	1.14
IPR Protection	3.44	1.51	3.47	1.04	3.80	0.84	2.86	1.39	3.86	1.07	3.70	1.16
Strategic counseling	3.33	1.50	3.04	1.22	3.60	1.14	2.91	1.19	3.71	0.76	3.30	1.09
Financial support	3.33	1.12	3.38	1.07	3.60	1.52	3.18	1.10	2.14	0.90	3.43	0.90
Networking of plants	3.33	1.22	3.04	1.18	3.20	0.45	2.64	1.18	3.00	1.00	2.98	1.05
Networking of strategic partners	3.33	1.12	3.02	1.17	3.00	1.22	2.77	1.11	2.86	0.69	3.05	0.93
Market information	3.22	1.39	2.72	1.12	3.80	0.45	2.68	1.13	3.57	0.79	2.98	1.10
Professional network	3.11	1.05	2.89	1.31	3.40	0.55	2.59	1.01	3.14	0.69	3.08	1.23
Links to financial sources	2.89	1.45	3.04	1.28	3.20	1.30	2.73	1.24	2.29	1.11	3.20	1.11
Access to labor pool	2.89	1.05	3.04	1.22	2.20	1.30	2.77	0.92	2.71	1.11	3.25	1.24
Source of technological information	2.89	1.69	2.47	1.25	3.40	0.55	2.27	1.20	3.29	0.76	2.83	1.20
Marketing	2.78	1.20	2.70	1.12	2.60	1.52	2.55	1.30	3.00	0.82	2.90	1.08
Connections with suppliers	2.56	1.42	3.15	1.02	3.80	0.84	2.86	1.13	4.00	0.58	3.00	1.28
Advanced studies and re-training	2.33	0.87	2.40	1.10	2.20	0.84	2.36	1.22	3.00	0.82	2.58	1.38
Total number of managers	9		47		5		22		7		40	
Spearman's rho:	r_s=0.595, sig.=0.009				r_s=0.555, sig.=0.017				r_s=0.347, sig.=0.158			

Table 51: Comparison of the Level of Satisfaction by Incubator Managers and Project Initiators Derived from Elements of the Technological Incubator Program, by Incubator Type

Element	General type				Specialized Type			
	Incubator Managers		Project Initiators		Incubator Managers		Project Initiators	
	Score	S.D.	Score	S.D.	Score	S.D.	Score	S.D.
Available suitable space	4.43	0.53	3.83	0.91	3.50	1.02	3.66	1.26
Management support	3.71	1.38	3.50	0.99	3.64	0.74	3.39	1.24
Legal counseling	3.71	1.25	2.98	1.18	3.86	1.17	3.76	1.10
IPR Protection	3.57	1.27	3.36	1.23	3.71	1.20	3.48	1.17
Source of technological information	3.57	0.98	2.62	1.23	2.93	1.27	2.52	1.24
Market information	3.43	1.27	2.74	1.01	3.50	0.94	2.85	1.17
Connections with suppliers	3.43	1.27	2.90	1.21	3.29	1.27	3.12	1.09
Professional network	3.29	0.76	2.86	1.16	3.14	0.86	2.93	1.27
Networking of plants	3.29	0.76	2.93	0.97	3.14	1.10	2.94	1.23
International collaborators	3.00	1.41	3.02	1.05	3.36	1.15	2.66	1.15
Strategic counseling	3.00	1.15	3.00	1.06	3.79	1.12	3.18	1.23
Financial support	2.86	1.07	3.26	0.94	3.07	1.38	3.42	1.06
Access to inputs	2.86	1.07	2.31	1.28	3.50	0.76	3.19	1.18
Networking of strategic partners	2.86	1.35	3.00	0.91	3.21	0.80	2.97	1.17
Marketing	2.86	1.07	2.71	1.15	2.79	1.19	2.76	1.14
Links to financial sources	2.71	1.11	3.10	1.14	2.79	1.42	3.00	1.27
Advanced studies and re-training	2.14	1.07	2.74	1.25	2.71	0.73	2.28	1.18
Access to labor pool	2.00	0.82	2.98	1.07	3.00	1.11	3.12	1.24
Number of incubators	8		47		13		62	
Spearman's rho:	r_s=0.260, sig.=0.297				r_s=0.655, sig.=0.003			

3.3 Project Initiators' level of Satisfaction versus Level of Importance Attached to These Services

In this section a comparison was held between the level of satisfaction among project initiators regarding the support they receive from the incubator, and the importance they place on the factors that might affect the success of the project upon maturation from the incubator. Project initiators specified the following factors as important for the success of a project: financial support, links to financial sources, networking with strategic partners, marketing, and international collaboration. All five factors received a high score of above 4.0. Apparently the level of satisfaction that project initiators derive from the services provided falls short of the scores they attach to the most important items. For example, the score for level of satisfaction given to marketing and international collaboration as well as to links to financial sources and financial support is far lower than their counter importance (Table 52).

Table 52: Project Initiators' Level of Satisfaction from Services Provided Versus Level of Importance Attached to These Services

Subject	Level of Satisfaction		Level of Importance	
	Score	Std. Deviation	Score	Std. Deviation
Available suitable space	3.72	1.14	2.31	1.29
Legal counseling	3.46	1.19	3.35	1.42
IPR Protection	3.43	1.19	3.32	1.51
Management support	3.43	1.15	2.74	1.39
Financial support	3.36	1.01	4.68	0.59
Strategic counseling	3.11	1.17	3.47	1.42
Access to labor pool	3.06	1.17	2.63	1.45
Links to financial sources	3.04	1.22	4.42	0.80
Connections with suppliers	3.04	1.14	2.27	1.27
Networking with strategic partners	2.98	1.07	4.08	1.05
Networking of plants	2.94	1.13	3.10	1.25
Professional network	2.90	1.22	2.82	1.27
Access to inputs	2.85	1.29	2.08	1.28
Market information	2.81	1.11	3.31	1.41
International collaborators	2.80	1.12	4.15	1.00
Marketing	2.74	1.14	4.17	1.14
Source of technological information	2.56	1.23	2.78	1.21
Advanced studies and re-training	2.46	1.22	2.52	1.28
Number of projects	109		109	
Spearman's rho:	r_s=0.028, sig.=0.913			

Comparison of project initiators' level of satisfaction, by incubator location (Table 53), indicates that project initiators gave the highest scores of importance in both relative and absolute terms, to financial support, links to financial sources, and marketing, regardless of location. On the other hand, project initiators gave the highest scores level-of-satisfaction to available suitable space, in all the three regions. Legal counseling received high level of satisfaction in metropolitan and peripheral regions, but not in the intermediate region. Management support received a high level of satisfaction in the intermediate and peripheral regions.

The results with regard to the project initiators attest to significant differences between factors receiving high levels of satisfaction and factors evaluated as important and instrumental to the projects after graduating from the incubator. These gaps were identified in all the regions examined (the correlation between the ranking pairs was accordingly low and non-significant). These findings seem to express the need to improve upon factors that project initiators consider to be important and instrumental to project success, but in which current service levels are unsatisfactory.

Table 53: Project Initiators' Level of Satisfaction from Services Provided Versus Level of Importance Attached to These Services, by Location

Element	Metropolitan region				Intermediate region				Peripheral region			
	Level of satisfaction		Level of Importance		Level of satisfaction		Level of Importance		Level of satisfaction		Level of Importance	
	Score	S.D.	Score	S.D.	Score	S.D.	Score	S.D.	Score	S.D.	Score	S.D.
Available suitable space	3.89	1.07	2.19	1.24	3.23	1.19	2.41	1.44	3.80	1.14	2.40	1.28
Legal counseling	3.60	1.06	3.19	1.42	2.77	1.23	3.32	1.43	3.68	1.21	3.55	1.41
Access to inputs	3.51	1.18	1.89	1.17	2.32	0.99	2.45	1.41	2.38	1.23	2.10	1.34
IPR Protection	3.47	1.04	3.15	1.50	2.86	1.39	3.09	1.48	3.70	1.16	3.65	1.51
Financial support	3.38	1.07	4.70	0.62	3.18	1.10	4.59	0.59	3.43	0.90	4.70	0.56
Management support	3.19	1.15	2.64	1.45	3.45	1.26	2.68	1.43	3.70	1.04	2.90	1.32
Connections with suppliers	3.15	1.02	2.06	1.29	2.86	1.13	2.05	1.21	3.00	1.28	2.63	1.21
Access to labor pool	3.04	1.22	2.40	1.48	2.77	0.92	2.68	1.59	3.25	1.24	2.88	1.32
Strategic counseling	3.04	1.22	3.43	1.49	2.91	1.19	3.41	1.53	3.30	1.09	3.55	1.32
Links to financial sources	3.04	1.28	4.40	0.88	2.73	1.24	4.32	0.84	3.20	1.11	4.50	0.68
Networking of plants	3.04	1.18	3.11	1.34	2.64	1.18	2.77	1.07	2.98	1.05	3.28	1.22
Networking with strategic partners	3.02	1.17	3.96	1.08	2.77	1.11	3.95	1.00	3.05	0.93	4.30	1.02
Professional network	2.89	1.31	2.79	1.35	2.59	1.01	2.82	1.10	3.08	1.23	2.85	1.29
International collaborators	2.81	1.26	4.11	1.05	2.64	1.22	4.05	1.09	2.88	0.88	4.25	0.90
Market information	2.72	1.12	2.91	1.41	2.68	1.13	3.45	1.44	2.98	1.10	3.70	1.29
Marketing	2.70	1.12	4.17	1.20	2.55	1.30	3.64	1.36	2.90	1.08	4.45	0.81
Source of technological information	2.47	1.25	2.47	1.16	2.27	1.20	2.86	1.36	2.83	1.20	3.10	1.13
Advanced studies and re-training	2.40	1.10	2.36	1.33	2.36	1.22	2.73	1.39	2.58	1.38	2.60	1.17
Number of projects	47				22				40			
Spearman's rho:	r_s=-0.145, sig.=0.565				r_s=-0.046, sig.=0.857				r_s=0.118, sig.=0.641			

There is very little difference in the level of satisfaction with the program by project initiators of both general type and specialized type (Table 54). Also there is very little difference in the level of importance attached to the various factors by project initiators of both general type and specialized type. However, there exist a significant difference between the level of importance and the level of satisfaction. While project initiators gave available suitable space, management support and ipr protection high scores, of satisfaction, they gave high scores of importance to financial support, links to financial sources, marketing, and networking of strategic partners. It seems natural to conclude that the factors that are considered important to project success after graduating from the incubator should be improved upon.

Table 54: Project Initiators' Level of Satisfaction from Services Provided Versus Level of Importance Attached to These Services, by Incubator Type

Elements	General type				Specialized type			
	Level of satisfaction		Level of Importance		Level of satisfaction		Level of Importance	
	Score	S.D.	Score	S.D.	Score	S.D.	Score	S.D.
Available suitable space	3.83	0.91	2.29	1.20	3.66	1.26	2.33	1.35
Management support	3.50	0.99	2.79	1.22	3.39	1.24	2.72	1.50
Legal counseling	2.98	1.18	3.52	1.44	3.76	1.10	3.24	1.40
IPR Protection	3.36	1.23	3.62	1.48	3.48	1.17	3.13	1.51
Sources of technological information	2.62	1.23	3.02	1.28	2.52	1.24	2.63	1.15
Market information	2.74	1.01	3.64	1.46	2.85	1.17	3.10	1.34
Connections with suppliers	2.90	1.21	2.38	1.08	3.12	1.09	2.19	1.37
Professional network	2.86	1.16	2.71	1.15	2.93	1.27	2.88	1.34
Networking of plants	2.93	0.97	2.90	1.23	2.94	1.23	3.22	1.25
International collaborators	3.02	1.05	4.02	1.16	2.66	1.15	4.22	0.88
Strategic counseling	3.00	1.06	3.43	1.45	3.18	1.23	3.49	1.42
Financial support	3.26	0.94	4.69	0.52	3.42	1.06	4.67	0.64
Access to inputs	2.31	1.28	2.31	1.41	3.19	1.18	1.94	1.19
Networking of strategic partners	3.00	0.91	4.05	1.19	2.97	1.17	4.10	0.96
Marketing	2.71	1.15	4.05	1.23	2.76	1.14	4.24	1.09
Links to financial sources	3.10	1.14	4.43	0.89	3.00	1.27	4.67	0.64
Advanced studies and re-training	2.74	1.25	2.79	1.30	2.28	1.18	2.36	1.25
Access to labor pool	2.98	1.07	2.76	1.45	3.12	1.24	2.55	1.46
Number of projects	47				62			
Spearman's rho:	r_s=0.196, sig.=0.437				r_s=-0.062, sig.=0.807			

Chapter 4: Conclusions and Recommendations

Following are the conclusions and recommendations derived from the analysis of the data collected from interviews conducted with 21 project managers and 109 entrepreneurs, as presented above.

1. In general, the Technological Incubator Program has fulfilled its purpose: 86.4% of the projects in the last three years were graduated from the program and 78% of them were able to secure financial support after graduation. The most successful projects were those involved with the following fields of activity: Computers and Hardware, Communication and Electronic Components, Biotechnology and Pharmaceuticals.

2. The incubator manager's leadership and skills are essential to the success of the incubator and its projects. The incubator manager greatly influences the selection process of accepting projects into the incubator, as well as their success.

3. The Israeli experience shows that the major reservoir of ideas is located in the central regions and their outskirts. Setting up technological incubators in these regions increases the chance of benefiting from a larger pool of ideas.

4. If obtaining funding for projects that have graduated from the incubator is regarded as an indication of "success"; then incubators located in the periphery present lower rates of success, compared with incubators located in the central regions. This phenomenon may be linked to the selection process of the projects accepted into the program.

5. The process of project selection is not as stringent in the periphery as it is in the central regions, since the pool of ideas is not as extensive there. Therefore, employing stricter criteria during the selection process will increase the probability of the selected projects to survive throughout the program and after it, especially in the peripheral regions.

6. Differences exist between projects belonging to different fields of activity, according to the incubator's location. It is possible that various factors such as

R&D centers, availability of highly skilled workers and others factors attracted the specific projects to some specific incubators.

7. Ten years after the establishment of the Technological Incubator Program it was discovered that the incubators are capable of enlarging their budget with non-governmental sources. Over 60% of the incubators' budgets, (currently about 12 million Dollars), originates from private sources - mostly royalties, sale of shares and dividends, and strategic partnerships. This finding suggests that vast government support required in the initial stage can gradually be reduced throughout time, after developing and attaining additional outside private funding sources.

8. Obtaining private funding for incubators, located in the peripheral regions, is more difficult, compared with incubators located in the metropolitan areas and in the intermediate regions. Therefore, technological incubators located in peripheral regions require more public support, and for a longer period of time, compared with those located in the central regions.

9. Concomitantly, projects within the incubators located in the peripheral regions require more funding, compared with projects located in the central regions. The average budget of a project located in peripheral incubator is smaller (80%) than that of projects located in the central regions. Public funding for projects in the periphery is 81% on average, compared with 64% for projects located in central region. The latter are usually more successful in obtaining private funding (Venture Capital, Angel and strategic partnerships), thus increasing their total budget.

10. Specializing in a small number of activities has no positive impact on an incubator's ability to obtain additional private funding, compared with diversified incubators. The average budget of a specialized incubator is similar to that of a diversified one. No differences were found between the two types of incubators with regard to the source of additional private funding for the projects.

11. Projects in the field of Biotechnology, Pharmaceuticals and software have more success in obtaining supplementary funding. It seems that these fields are more attractive to potential investors than other fields.

12. Projects graduated from specialized incubators did not increase their rate of success in obtaining funding for their future activities, compared with projects graduated from diversified incubators. Therefore, the findings do not support the claim that specialization contributes to success, although incubator managers stated a clear preference for specialization.

13. Incubator managers were generally happy (satisfy) with the services that were provided to the projects by the program. However, the major barriers in running projects in the incubator were linked, according to the managers, to budget limitations and lack of management knowledge. Incubator managers, regardless of location and specialization, were unanimous on that point.

14. 84% of the initiators have either a Masters or PhD. degree (63% have a PhD degree). This indicates that incubators provide the opportunity for highly educated people to materialize new ideas.

15. The incubators allow initiators from Academia and R&D departments in industry to develop new ideas, while receiving financial, management and marketing support.

16. A link exists between the preferred location of a mature project, and the location of the incubator from which it has stemmed. This preference also exists in peripheral regions, and may indicate a potential for new employment opportunities, thus having a positive impact on the local economy.

17. Incubators specializing in the fields of Biotechnology, Pharmaceuticals and Medical Equipment should be located near Universities and research centers with parallel fields of study, due to a relevant research infrastructure found there. This type of affinity does not seem to exist for the other fields that were examined.

18. According to the project initiators, the most important factors affecting the success of the project, and the ones requiring improved services rendered by

the incubators, are: financial support, financial sources, marketing, international collaborations and networking with strategic partners (the level of satisfaction for all these factors was relatively low among initiators).

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Appendices

A1: Project Distribution in the Incubators, by Field

A2: Project Initiators' Reasons for Choosing an Incubator, by Field and by Location
Project Initiators' Levels of Satisfaction with Incubator Support, by Field
Factors Affecting the Initiation of a Project, by Location and by Field

Appendix 1: Project Distribution in the Incubators, by Field

Table 1a: Cumulative Percentage of Projects in 21 Incubators

Number of fields of activity	Incubator							
	Dimona	Nes Ziona	Technion	Beer Sheva	Ofaqim	Kazerin	Misgav	Jerusalem (Ptir)
1	40%	25%	73%	17%	33%	22%	50%	33%
2	60%	50%	82%	33%	56%	39%	67%	67%
3	70%	75%	91%	50%	78%	56%	83%	83%
4	80%	88%	100%	67%	89%	72%	100%	100%
5	90%	100%		83%	100%	83%		
6	100%			100%		89%		
7								

Table 1b (con…): Cumulative Percentage of Projects in 21 Incubators

Number of fields of activity	Incubator							
	Yavne	Qiryat Gat	Nazaret Elit	Ashqelon	Hadera	Ramat Gan	Qiryat Shmona	Jerusalem
1	29%	60%	25%	38%	46%	63%	50%	50%
2	50%	70%	50%	62%	69%	88%	83%	75%
3	64%	80%	67%	69%	85%	100%	100%	88%
4	79%	90%	83%	77%	92%			100%
5	86%	100%	92%	85%	100%			
6	93%		100%	92%				
7	100%			100%				

Table 1c (con…): Cumulative Percentage of Projects in 21 Incubators

Number of fields of activity	Incubator				
	Sde Boqer	Zemah	Haifa	Migdal Ha-Emeq	Netanya
1	33%	42%	36%	31%	40%
2	67%	83%	55%	50%	60%
3	83%	92%	73%	69%	80%
4	100%	100%	82%	81%	100%
5			91%	94%	
6			100%	100%	

Figure 1: Project Distribution in the Dimona Incubator, by Field

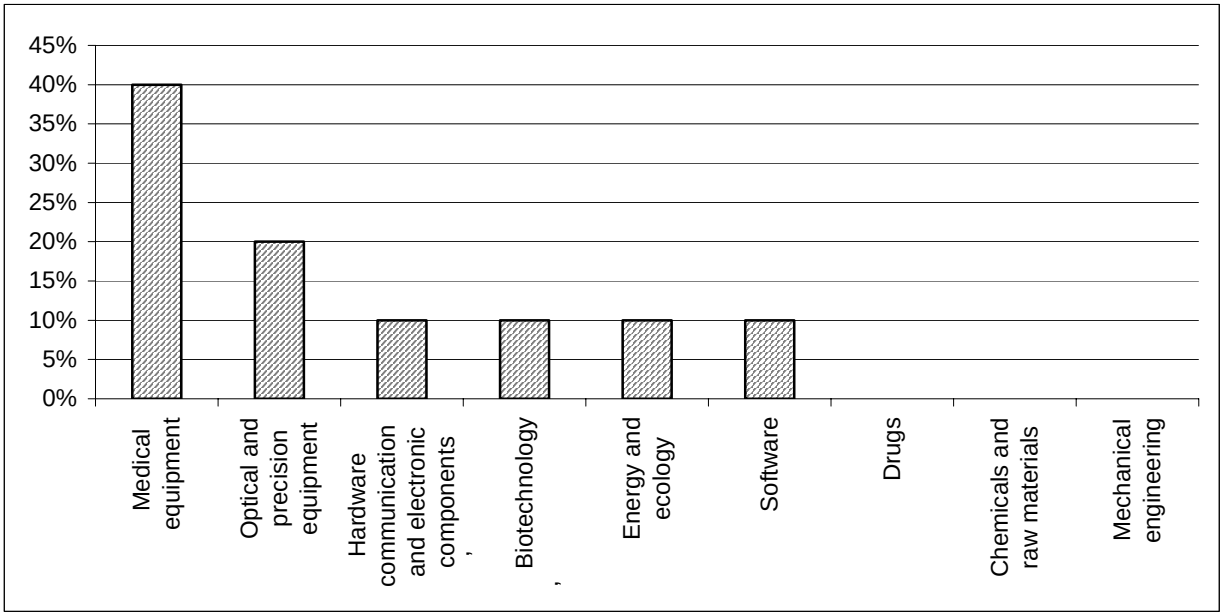


Figure 2: Project Distribution in the Nes Ziona Incubator, by Field

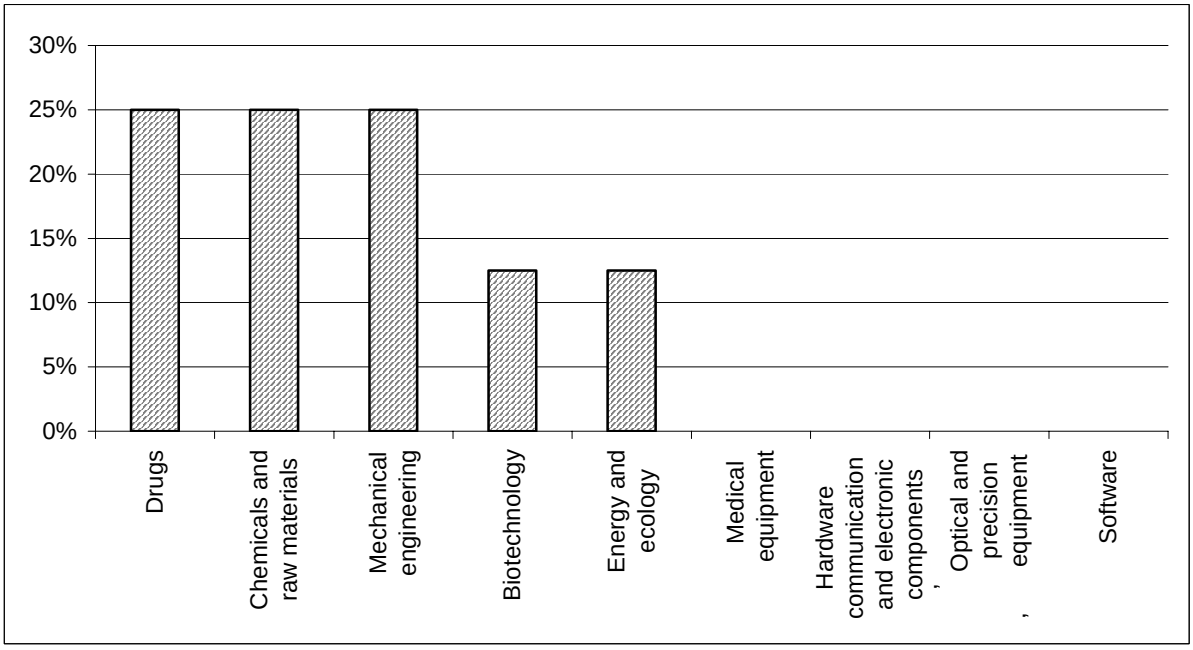


Figure 3: Project Distribution in the Technion Incubator, by Field

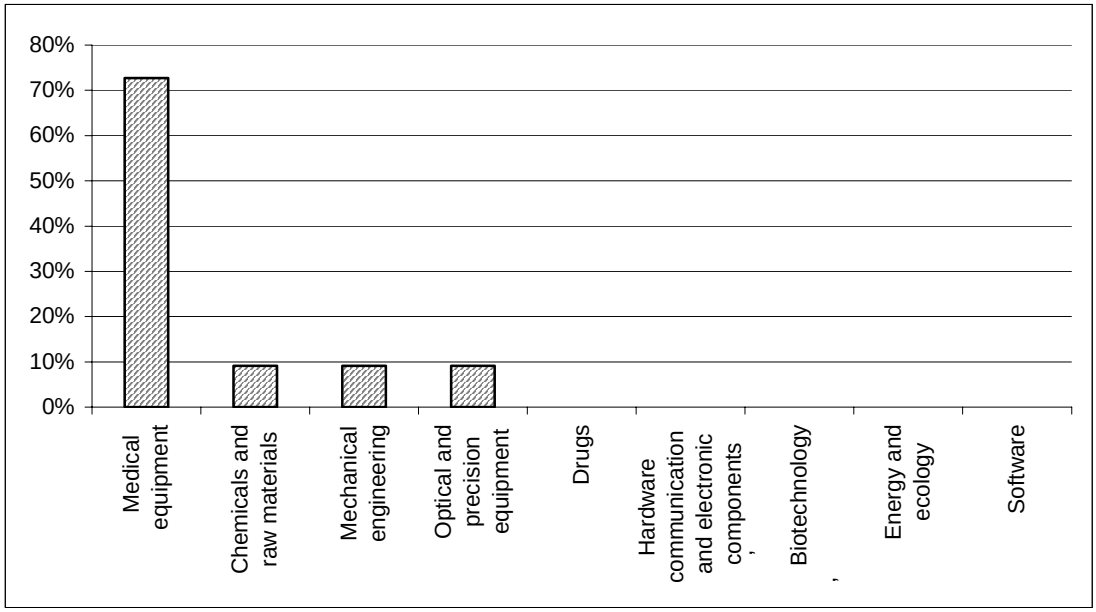


Figure 4: Project Distribution in the Ofaqim Incubator, by Field

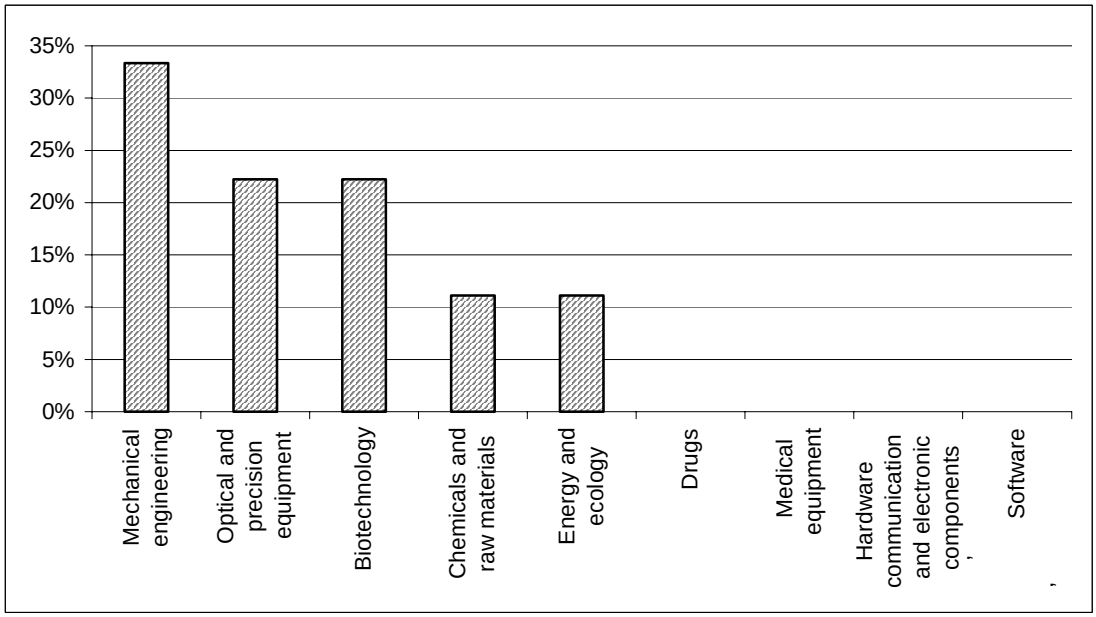


Figure 5: Project Distribution in the Kazerin Incubator, by Field

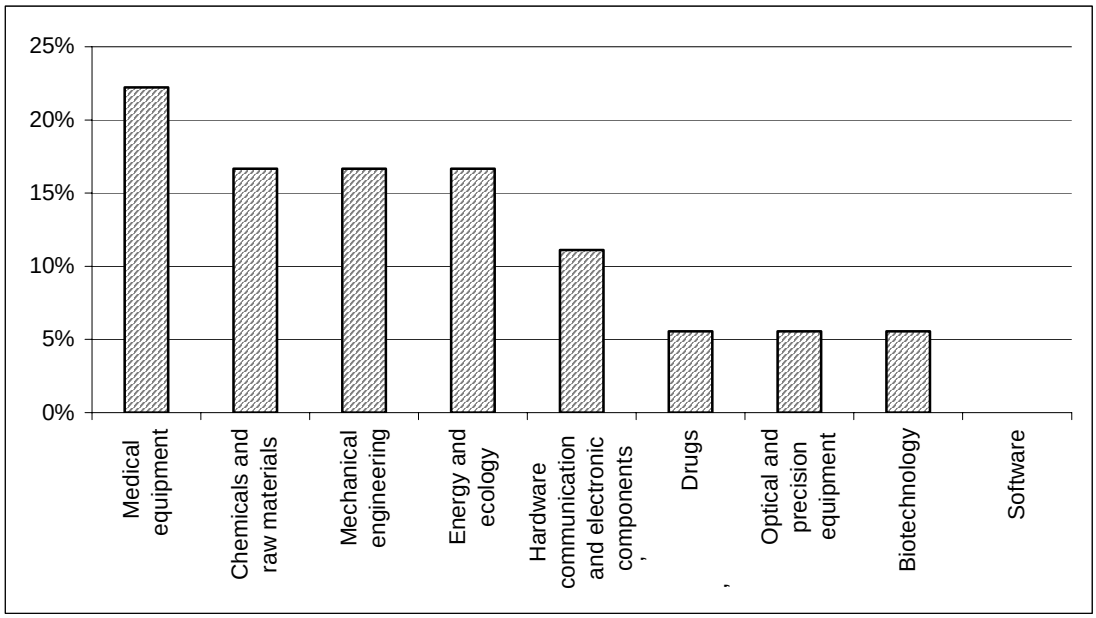


Figure 6: Project Distribution in the Misgav Incubator, by Field

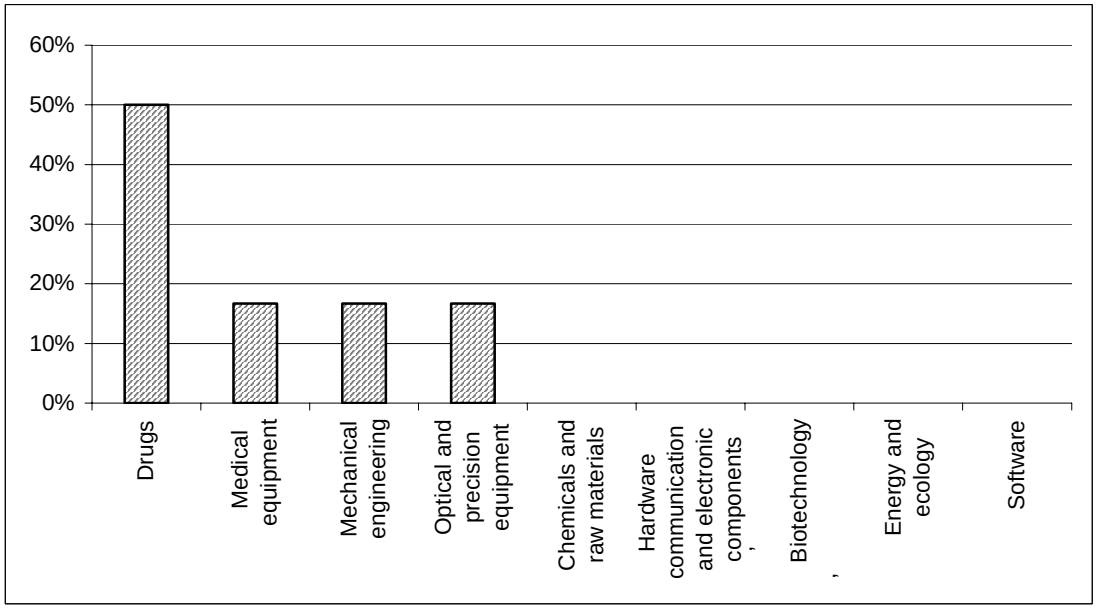


Figure 7: Project Distribution in the Jerusalem (Ptir) Incubator, by Field

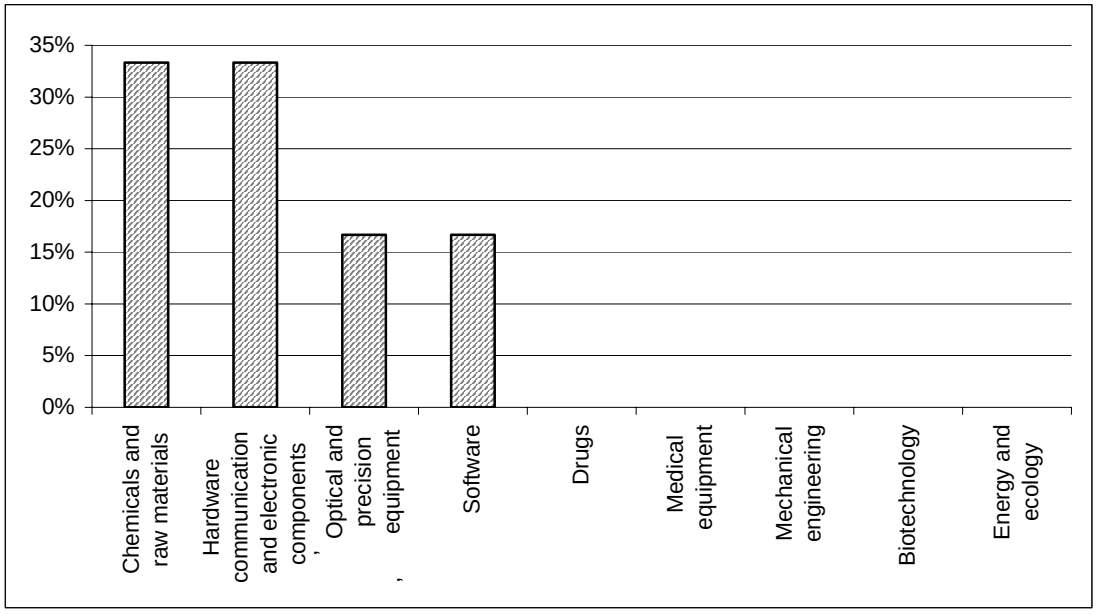


Figure 8: Project Distribution in the Yavne Incubator, by Field

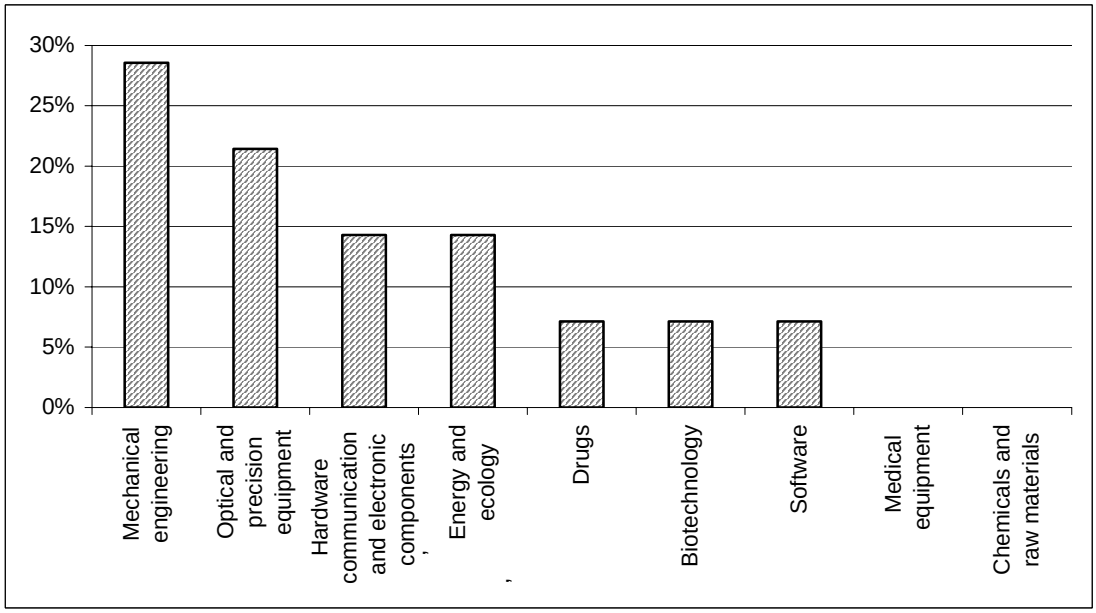


Figure 9: Project Distribution in the Qiryat Gat Incubator, by Field

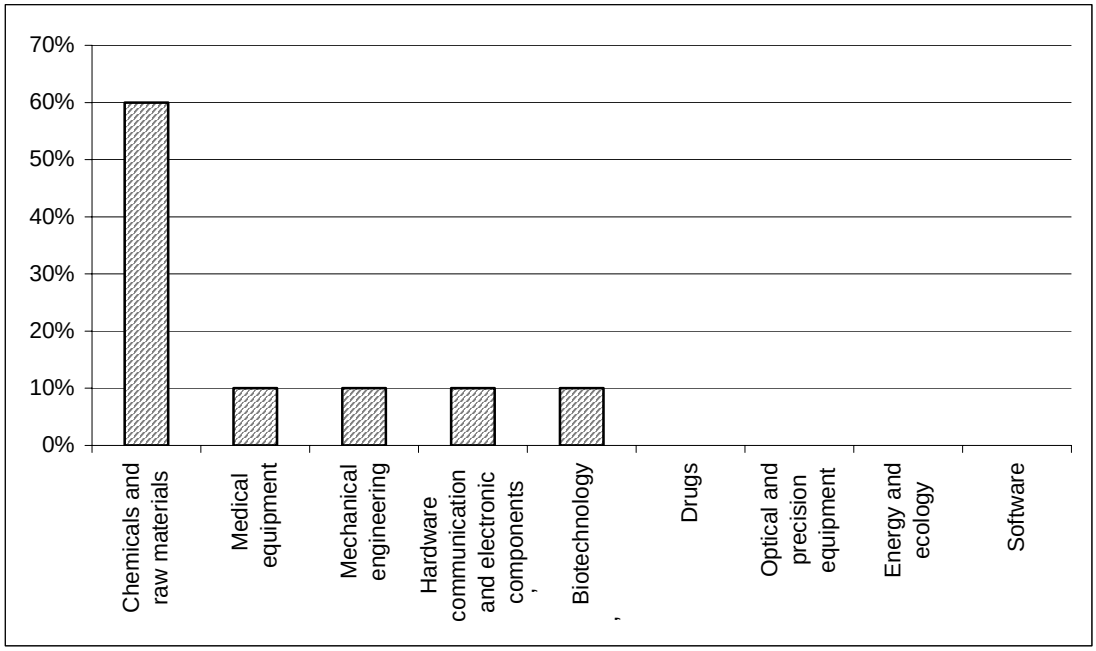


Figure 10: Project Distribution in the Nazaret Elit Incubator, by Field

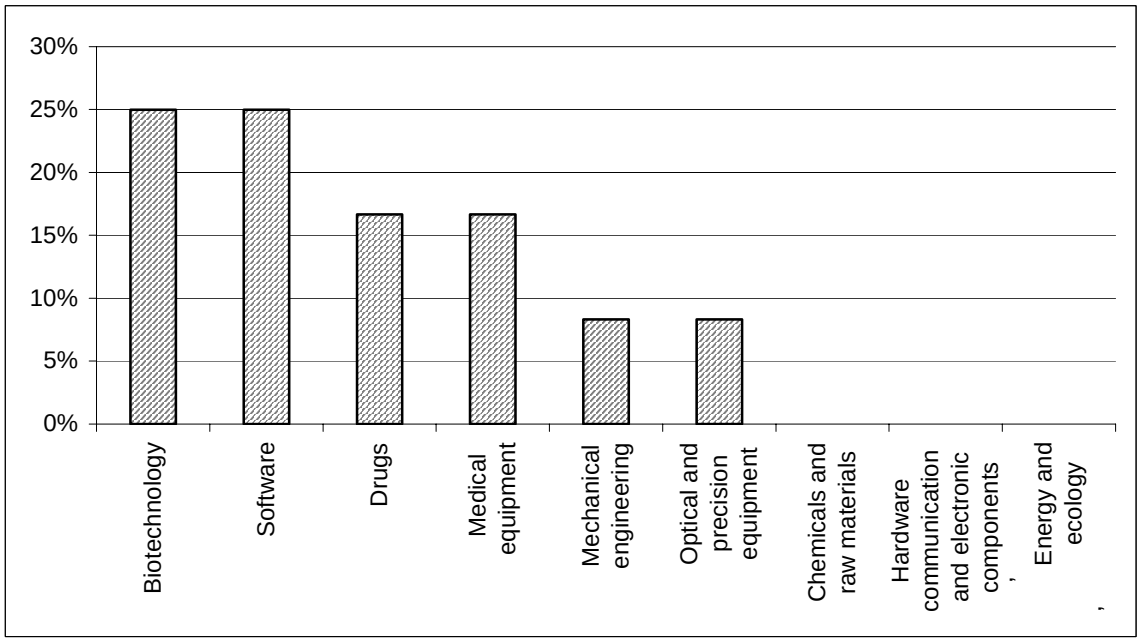


Figure 11: Project Distribution in the Ashqelon Incubator, by Field

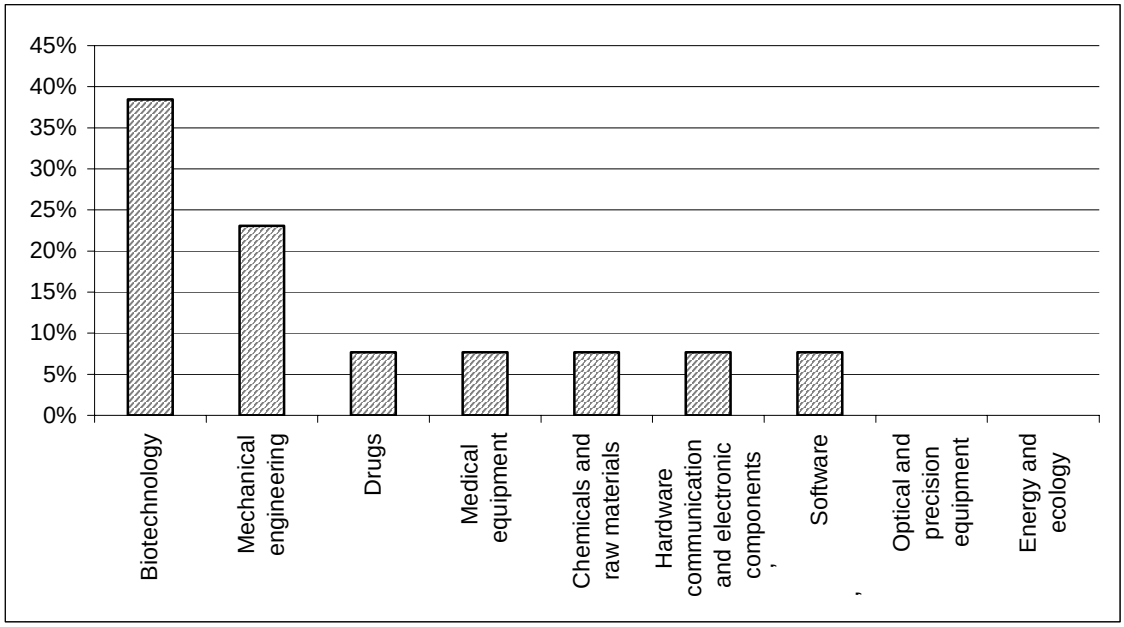


Figure 12: Project Distribution in the Hadera Incubator, by Field

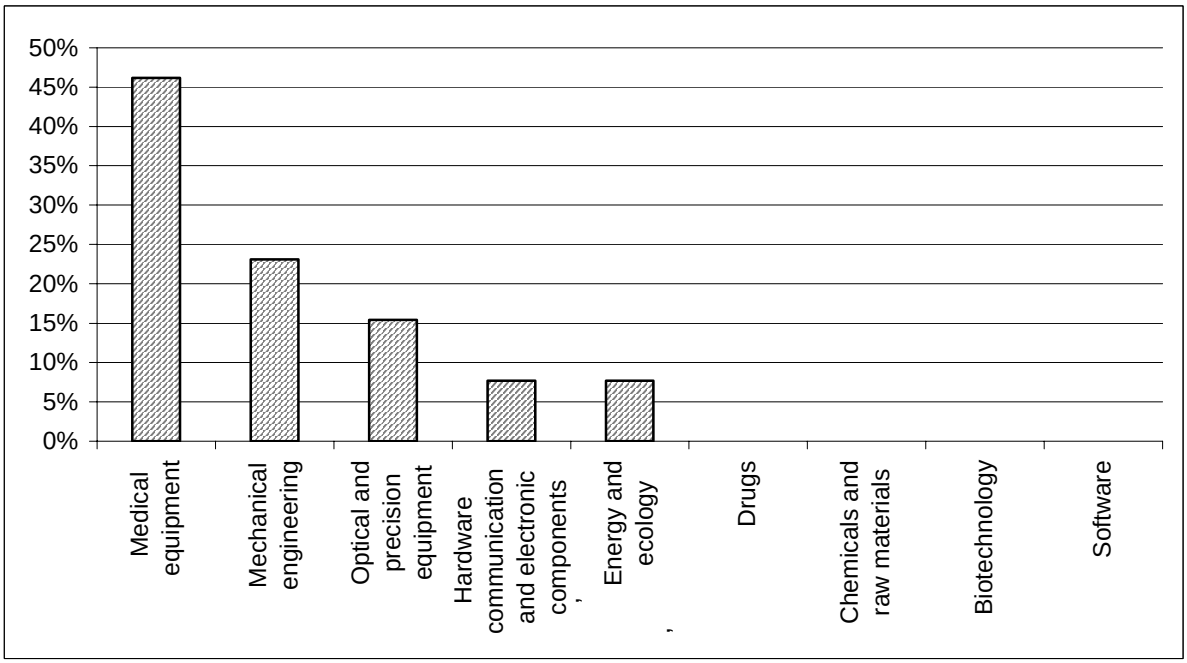


Figure 13: Project Distribution in the Ramat Gan Incubator, by Field

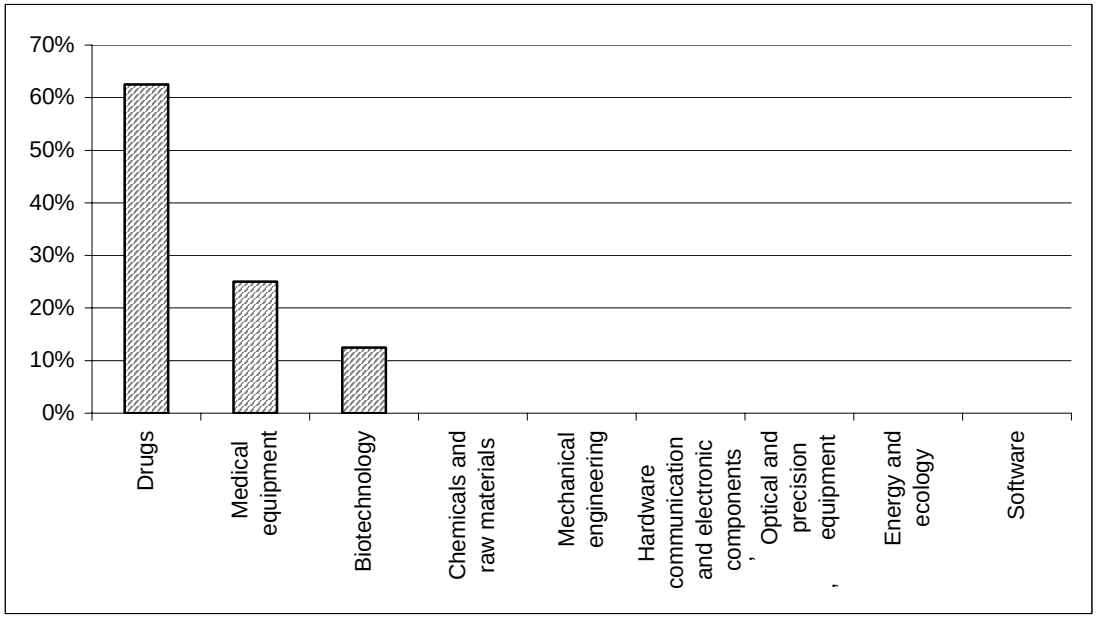


Figure 14: Project Distribution in the Qiryat Shmona Incubator, by Field

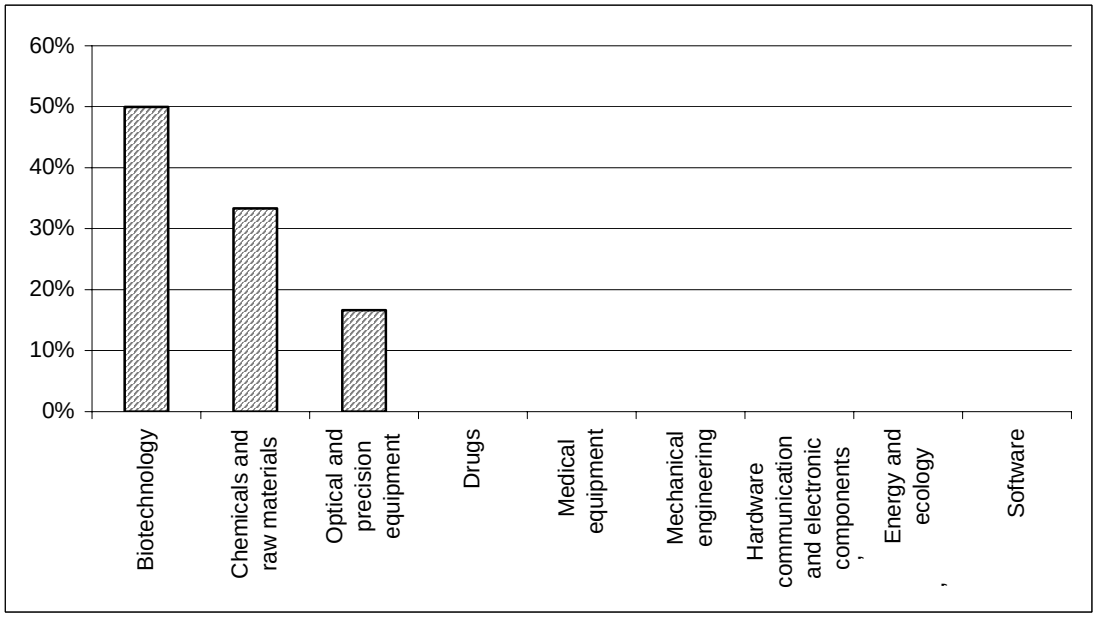


Figure 15: Project Distribution in the Jerusalem Incubator, by Field

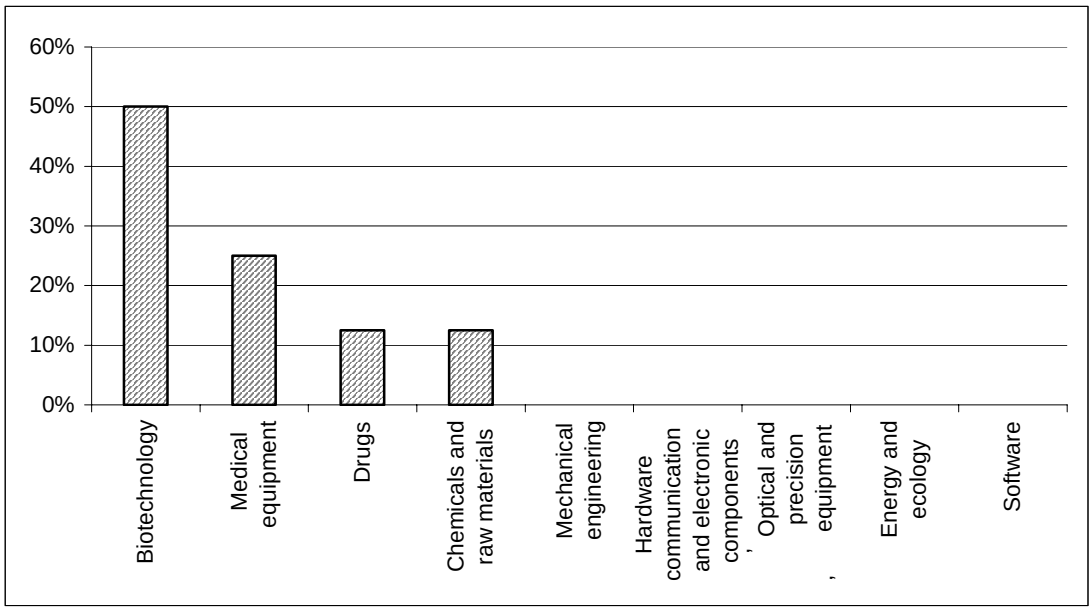


Figure 16: Project Distribution in the Sde Boqer Incubator, by Field

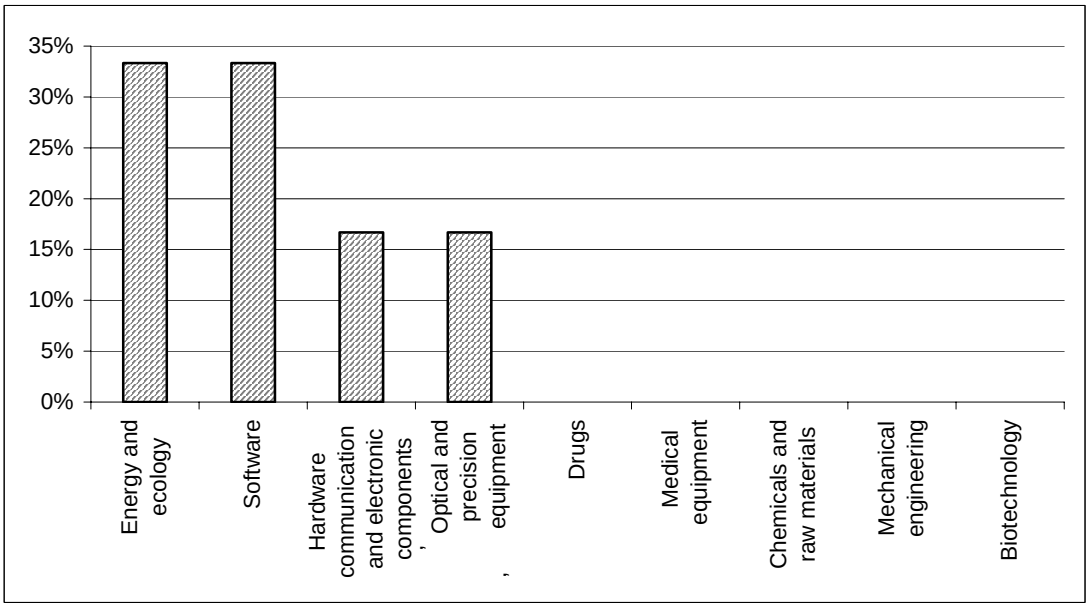


Figure 17: Project Distribution in the Zemah Incubator, by Field

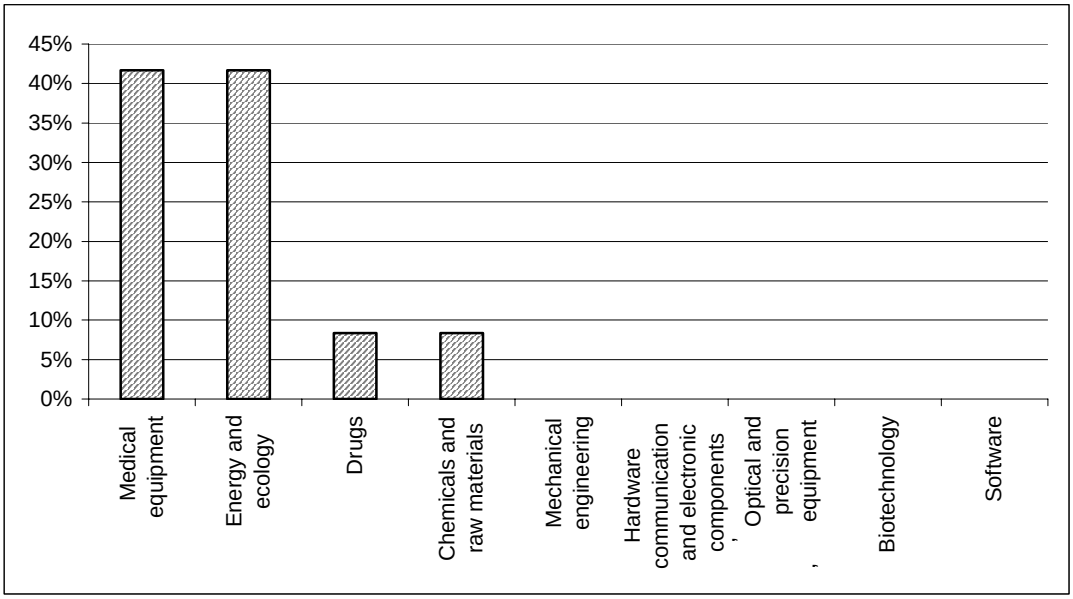


Figure 18: Project Distribution in the Haifa Incubator, by Field

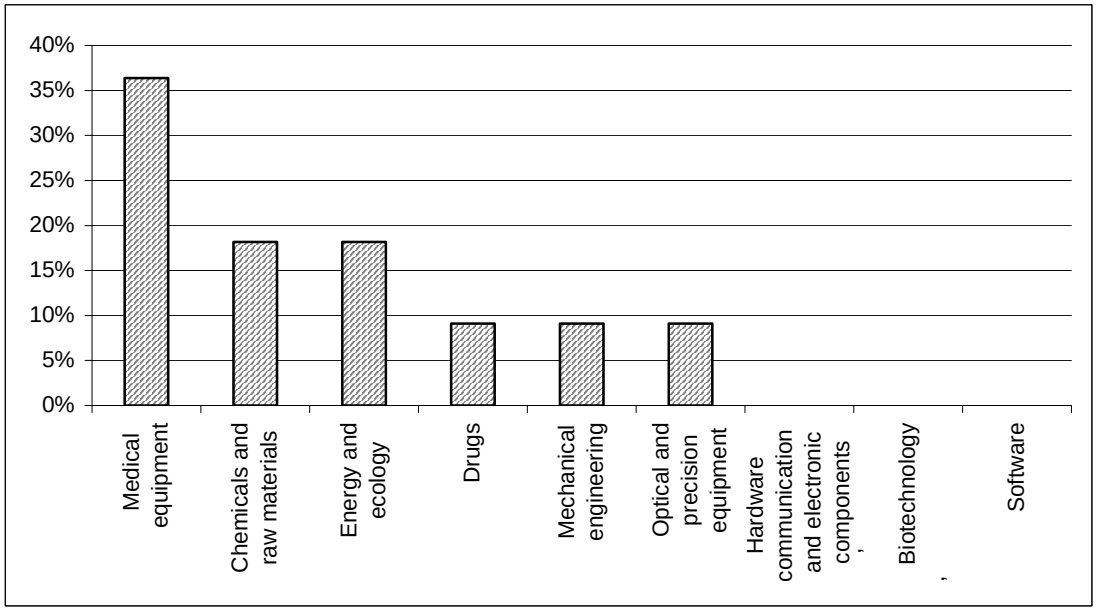


Figure 19: Project Distribution in the Migdal Ha - Emeq Incubator, by Field

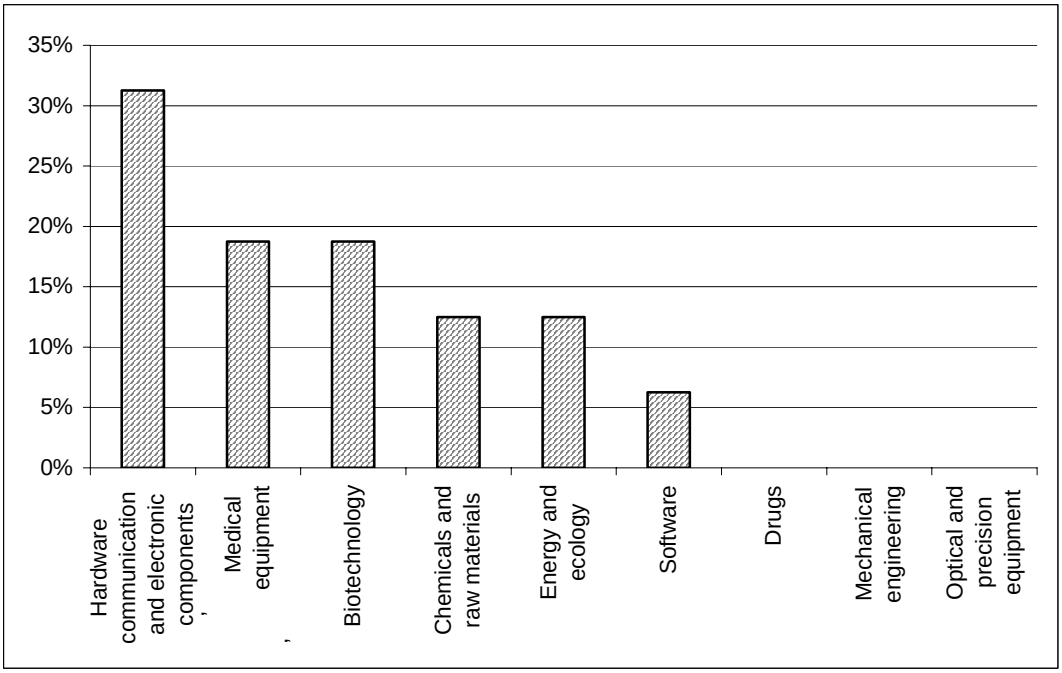


Figure 20: Project Distribution in the Netanya Incubator, by Field

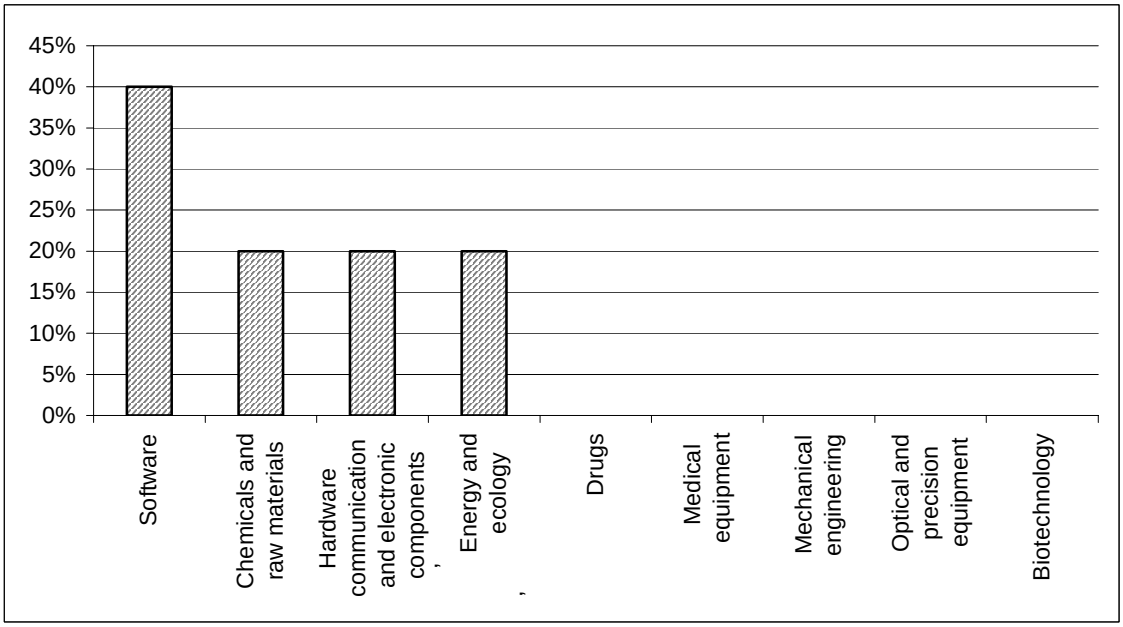
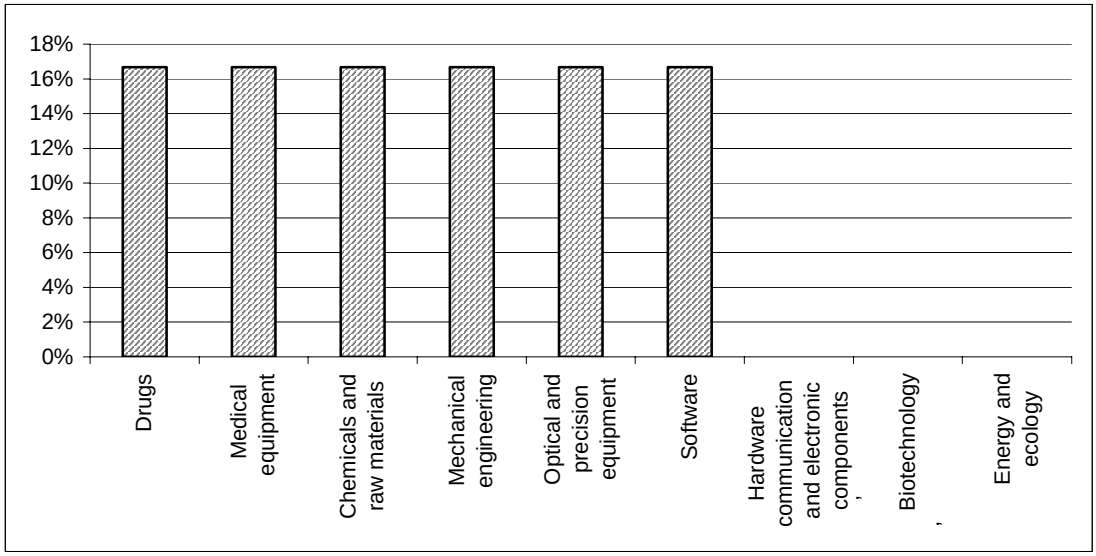


Figure 21: Project Distribution in the Beer Sheva Incubator, by Field



A2: Project Initiators' Reasons for Choosing an Incubator, by Field and by Location
Project Initiators' Levels of Satisfaction with Incubator Support, by Field
Factors Affecting the Initiation of a Project, by Location and by Field

Table 1a: Project Initiators' Reasons for Choosing an Incubator, by Field

Reasons	Drugs			Medical Equipment			Chemicals and Raw Materials			Mechanical Engineering		
	Rank	Score	Std. Deviation	Rank	Score	Std. Deviation	Rank	Score	Std. Deviation	Rank	Score	Std. Deviation
Identical projects in incubator	1	2.58	1.73	7	1.59	1.18	6	1.67	1.15	9	1.00	0.00
Area with a good potential	2	2.50	1.68	5	1.82	1.19	10	1.00	0.00	3	2.36	1.45
Close to place of residence	3	2.42	1.51	2	2.41	1.54	1	2.83	1.85	1	3.36	1.28
Close to university	4	2.33	1.72	3	2.24	1.52	7	1.50	1.24	7	1.57	1.22
Similar projects successfully graduated from the incubator	5	2.25	1.42	9	1.24	0.56	8	1.42	1.00	9	1.00	0.00
Prestige of the incubator	6	2.08	1.68	4	2.12	1.17	5	1.83	1.34	4	2.00	1.47
Acquaintance with the incubator manager	7	2.00	1.81	1	2.53	1.81	2	2.75	1.76	2	2.50	1.56
Expertise	8	1.75	1.22	6	1.65	1.22	4	1.92	1.38	6	1.79	1.31
University collaborations	9	1.67	1.56	9	1.24	0.97	9	1.33	1.15	9	1.00	0.00
Team	9	1.67	1.56	8	1.47	1.33	9	1.33	1.15	9	1.00	0.00
Fast acceptance	10	1.33	1.15	1	2.53	1.94	3	2.67	2.06	5	1.86	1.70
Salary	10	1.33	1.15	11	1.00	0.00	10	1.00	0.00	9	1.00	0.00
Financial conditions	11	1.00	0.00	8	1.47	1.33	6	1.67	1.56	9	1.00	0.00
Near former place of work	11	1.00	0.00	11	1.00	0.00	10	1.00	0.00	8	1.29	1.07
Former incubator employee	11	1.00	0.00	11	1.00	0.00	4	1.92	1.68	9	1.00	0.00
Incubator initiated	11	1.00	0.00	10	1.18	0.73	10	1.00	0.00	9	1.00	0.00
Number of projects	12			17			12			14		

Table 1b: Project Initiators' Reasons for Choosing an Incubator, by Field

Reasons	Hardware, Communication and Electronic Components			Optical and Precision Equipment			Biotechnology			Energy and Ecology			Software		
	Rank	Score	Std. Deviation	Rank	Score	Std. Deviation	Rank	Score	Std. Deviation	Rank	Score	Std. Deviation	Rank	Score	Std. Deviation
Identical projects in incubator	6	1.71	1.25	9	1.00	0.00	7	1.88	1.58	7	1.58	1.16	8	1.00	0.00
Area with a good potential	3	2.57	1.27	5	1.75	1.49	3	2.65	1.58	2	2.42	1.38	4	1.90	1.20
Close to place of residence	1	3.71	1.25	1	2.25	1.58	2	2.76	1.48	3	2.17	1.64	1	2.40	1.71
Close to university	7	1.57	0.79	8	1.13	0.35	1	3.06	1.75	7	1.58	1.16	7	1.30	0.95
Similar projects successfully graduated from the incubator	7	1.57	0.98	9	1.00	0.00	9	1.53	0.87	9	1.17	0.39	8	1.00	0.00
Prestige of the incubator	5	2.00	1.00	2	2.13	1.25	5	2.06	1.34	5	1.83	1.27	2	2.20	1.62
Acquaintance with the incubator manager	2	3.14	1.68	2	2.13	1.64	6	1.94	1.39	6	1.75	1.54	3	2.00	1.63
Expertise	8	1.29	0.49	7	1.25	0.71	4	2.18	1.59	4	2.00	1.13	8	1.10	0.32
University collaborations	9	1.00	0.00	9	1.00	0.00	10	1.47	1.33	10	1.00	0.00	8	1.00	0.00
Team	4	2.14	1.95	6	1.50	1.41	8	1.59	1.37	4	2.00	1.81	5	1.80	1.69
Fast acceptance	7	1.57	1.51	6	1.50	1.41	10	1.47	1.33	1	2.67	2.06	2	2.20	1.93
Salary	9	1.00	0.00	9	1.00	0.00	11	1.24	0.97	10	1.00	0.00	6	1.40	1.26
Financial conditions	4	2.14	1.95	3	2.00	1.85	11	1.24	0.97	9	1.17	0.58	6	1.40	1.26
Near former place of work	9	1.00	0.00	9	1.00	0.00	12	1.00	0.00	10	1.00	0.00	8	1.00	0.00
Former incubator employee	7	1.57	1.51	4	1.88	1.64	12	1.00	0.00	8	1.33	1.15	8	1.00	0.00
Incubator initiated	9	1.00	0.00	9	1.00	0.00	12	1.00	0.00	10	1.00	0.00	2	2.20	1.93
Number of projects	7			8			17			12			10		

Table 2a: Project Initiators' Levels of Satisfaction with Incubator Support, by Field

Subject	All Projects			Drugs			Medical Equipment			Chemicals and Raw Materials			Mechanical Engineering		
	Rank	Score	S.D.	Rank	Score	S.D.	Rank	Score	S.D.	Rank	Score	S.D.	Rank	Score	S.D.
Available suitable space	1	3.72	1.14	1	3.42	0.90	5	3.29	1.26	3	3.67	1.37	1	4.00	1.36
Legal counseling	2	3.46	1.19	6	3.00	1.41	2	3.65	1.06	2	3.83	1.19	7	3.14	1.29
IPR Protection	3	3.43	1.19	3	3.25	1.42	8	3.00	1.12	1	4.08	1.08	5	3.29	1.44
Management support	3	3.43	1.15	4	3.17	1.40	3	3.41	1.23	4	3.50	1.09	2	3.64	0.74
Financial support	4	3.36	1.01	2	2.33	1.07	1	4.00	0.79	5	3.42	1.00	3	3.50	0.76
Strategic counseling	5	3.11	1.17	9	2.67	1.23	9	2.94	1.34	5	3.42	1.31	4	3.36	1.01
Access to labor pool	6	3.06	1.17	7	2.92	1.24	7	3.06	1.20	9	3.08	1.08	5	3.29	0.73
Links to financial sources	7	3.04	1.22	8	2.83	1.27	9	2.94	1.43	3	3.67	0.65	10	2.93	1.27
Connections with suppliers	7	3.04	1.14	11	2.50	0.90	10	2.82	1.19	9	3.08	1.31	6	3.21	1.19
Networking with strategic partners	8	2.98	1.07	15	2.17	0.83	7	3.06	1.48	4	3.50	1.00	9	3.00	1.11
Networking of plants	9	2.94	1.13	13	2.33	1.07	9	2.94	1.43	4	3.50	1.09	9	3.00	1.04
Professional network	10	2.90	1.22	5	3.08	1.08	4	3.35	1.22	9	3.08	1.44	8	3.07	1.07
Access to inputs	11	2.85	1.29	6	3.00	1.65	6	3.18	1.19	10	2.67	1.37	10	2.93	1.14
Market information	12	2.81	1.11	7	2.92	1.08	11	2.53	1.12	7	3.25	0.97	12	2.71	1.07
International collaborators	13	2.80	1.12	14	2.25	0.87	6	3.18	1.47	5	3.42	0.67	6	3.21	0.89
Marketing	14	2.74	1.14	10	2.58	1.16	9	2.94	1.25	8	3.17	1.11	11	2.79	1.37
Source of technological information	15	2.56	1.23	8	2.83	0.83	13	2.18	1.24	7	3.25	1.06	13	2.50	1.22
Advanced studies and re-training	16	2.46	1.22	12	2.42	1.08	12	2.47	1.12	6	3.33	1.07	14	2.21	1.31
Number of projects	109			12			17			12			14		

Table 2b: Project Initiators' Level of Satisfaction with Incubator Support, by Field

Subject	Hardware, Communication, and Electronic Components			Optical and Precision Equipment			Biotechnology			Energy and Ecology			Software		
	Rank	Score	S.D.	Rank	Score	S.D.	Rank	Score	S.D.	Rank	Score	S.D.	Rank	Score	S.D.
Available suitable space	1	3.29	0.76	2	3.63	0.92	1	4.00	1.06	3	3.75	1.14	1	4.40	0.84
Legal counseling	4	2.86	1.46	3	3.50	1.51	5	3.41	0.94	1	3.92	1.08	2	3.60	0.97
IPR Protection	7	2.43	1.13	1	3.75	1.04	4	3.47	1.23	1	3.92	0.67	2	3.60	0.84
Management support	2	3.14	0.69	4	3.13	1.46	6	3.35	1.22	2	3.83	1.27	3	3.50	1.18
Financial support	3	3.00	1.00	5	3.00	1.31	3	3.53	0.94	3	3.75	0.87	6	3.00	0.67
Strategic counseling	5	2.71	1.38	6	2.88	1.13	8	3.12	0.93	5	3.33	1.37	4	3.40	0.84
Access to labor pool	8	2.29	1.11	5	3.00	1.07	2	3.59	1.00	12	2.67	1.56	5	3.10	1.45
Links to financial sources	7	2.43	1.13	8	2.50	1.31	11	2.76	1.03	4	3.50	1.24	2	3.60	1.17
Connections with suppliers	10	2.00	0.82	5	3.00	1.69	2	3.59	1.00	8	3.08	0.79	3	3.50	0.71
Networking with strategic partners	6	2.57	0.53	5	3.00	0.93	9	3.06	0.90	6	3.25	0.97	6	3.00	1.05
Networking of plants	5	2.71	0.76	5	3.00	0.93	7	3.29	1.10	7	3.17	0.72	11	2.10	1.20
Professional network	7	2.43	0.53	8	2.50	1.07	9	3.06	1.34	13	2.58	1.38	10	2.20	1.23
Access to inputs	8	2.29	0.95	6	2.88	1.64	10	2.94	1.30	11	2.75	1.29	9	2.60	1.26
Market information	5	2.71	1.38	7	2.63	1.19	12	2.71	1.10	9	3.00	1.13	7	2.90	1.29
International collaborators	6	2.57	1.27	9	2.38	1.30	13	2.53	0.87	12	2.67	0.98	9	2.60	1.35
Marketing	6	2.57	1.27	7	2.63	1.19	14	2.35	0.93	10	2.83	1.11	8	2.80	1.03
Source of technological information	11	1.86	0.90	7	2.63	1.41	11	2.76	1.25	12	2.67	1.50	11	2.10	1.29
Advanced studies and re-training	9	2.14	0.69	10	1.63	0.92	12	2.71	1.26	14	2.50	1.38	10	2.20	1.48
Number of projects	7			8			17			12			10		

Table 3: Factors Affecting the Initiation of a Project, by Location

Factors	Location									Mann-Whitney U-test		
	Metropolitan region			Intermediate region			Peripheral region			Metropolitan & Intermediate region	Metropolitan & Peripheral region	Peripheral & Intermediate region
	Rank	Score	Std. Deviation	Rank	Score	Std. Deviation	Rank	Score	Std. Deviation	z	z	z
Financial support	1	4.70	0.62	1	4.59	0.59	1	4.70	0.56	-1.06	-0.17	-0.87
Links to financial sources	2	4.40	0.88	2	4.32	0.84	2	4.50	0.68	-0.58	-0.27	-0.80
Marketing	3	4.17	1.20	5	3.64	1.36	3	4.45	0.81	-1.79*	-0.90	-2.47**
International collaborators	4	4.11	1.05	3	4.05	1.09	5	4.25	0.90	-0.22	-0.51	-0.63
Networking with strategic partners	5	3.96	1.08	4	3.95	1.00	4	4.30	1.02	-0.22	-1.86*	-1.72*
Strategic counseling	6	3.43	1.49	7	3.41	1.53	8	3.55	1.32	-0.01	-0.25	-0.21
Legal counseling	7	3.19	1.42	8	3.32	1.43	8	3.55	1.41	-0.47	-1.27	-0.65
IPR Protection	8	3.15	1.50	9	3.09	1.48	7	3.65	1.51	-0.18	-1.64	-1.52
Networking of plants	9	3.11	1.34	12	2.77	1.07	9	3.28	1.22	-1.15	-0.54	-1.64
Market information	10	2.91	1.41	6	3.45	1.44	6	3.70	1.29	-1.54	-2.67**	-0.57
Professional network	11	2.79	1.35	11	2.82	1.10	13	2.85	1.29	-0.04	-0.18	-0.05
Management support	12	2.64	1.45	14	2.68	1.43	11	2.90	1.32	-0.03	-0.97	-0.48
Source of technological information	13	2.47	1.16	10	2.86	1.36	10	3.10	1.13	-1.21	-2.54**	-0.56
Access to labor pool	14	2.40	1.48	14	2.68	1.59	12	2.88	1.32	-0.72	-1.69	-0.42
Advanced studies and re-training	15	2.36	1.33	13	2.73	1.39	15	2.60	1.17	-1.12	-1.12	-0.36
Available suitable space	16	2.19	1.24	16	2.41	1.44	16	2.40	1.28	-0.57	-0.76	-0.11
Connections with suppliers	17	2.06	1.29	17	2.05	1.21	14	2.63	1.21	-0.02	-2.34**	-1.77*
Access to inputs	18	1.89	1.17	15	2.45	1.41	17	2.10	1.34	-1.61	-0.63	-1.01
Number of projects	47			22			40					

* Significant at the 0.1 level,
** Significant at the 0.05 level.
Spearman's rho:
Between metropolitan & intermediate region r_s= 0.939, sig.=0.000;
Between metropolitan & peripheral region r_s= 0.950, sig.=0.000;

Between peripheral & intermediate region rs= 0.939, sig.=0.000

Table 4a: Factors Affecting the Initiation of a Project, by Field

Factors	Drugs			Medical Equipment			Chemicals and Raw Materials			Mechanical Engineering		
	Rank	Score	S.D.	Rank	Score	S.D.	Rank	Score	S.D.	Rank	Score	S.D.
Financial support	1	4.75	0.45	1	4.59	0.62	1	5.00	0.00	1	4.57	0.65
Networking with strategic partners	2	4.42	0.67	5	3.35	1.54	3	4.08	0.90	5	3.79	1.37
International collaborators	3	4.17	0.39	4	3.82	1.55	4	4.00	0.95	4	4.07	1.27
Links to financial sources	4	4.08	1.00	3	4.18	1.01	2	4.17	0.94	2	4.50	0.65
Legal counseling	5	3.83	1.47	8	2.76	1.68	7	3.42	1.38	7	3.14	1.79
Marketing	6	3.75	1.42	2	4.24	1.25	5	3.92	1.24	3	4.36	1.15
Strategic counseling	6	3.75	1.48	6	3.12	1.73	11	2.67	0.98	6	3.29	1.82
IPR Protection	7	3.67	1.61	9	2.59	1.62	6	3.83	1.19	9	2.57	1.65
Networking of plants	8	3.50	0.80	10	2.53	1.46	12	2.58	1.00	8	2.86	1.46
Professional network	9	3.33	1.07	14	2.18	1.19	10	2.75	1.06	11	2.43	1.50
Access to labor pool	10	3.00	1.21	15	2.12	1.36	11	2.67	1.56	16	2.14	1.66
Management support	10	3.00	1.41	12	2.29	1.53	12	2.58	1.08	9	2.57	1.55
Source of technological information	10	3.00	0.85	13	2.24	1.48	9	2.83	1.19	13	2.29	1.33
Market information	10	3.00	1.48	7	2.94	1.52	8	3.25	1.36	10	2.50	1.74
Access to inputs	11	2.83	1.27	18	1.65	1.00	13	2.33	1.78	15	1.79	1.37
Available suitable space	12	2.75	1.22	17	1.88	1.05	16	1.75	1.22	14	2.21	1.63
Advanced studies and re-training	13	2.42	1.08	11	2.47	1.28	15	2.17	0.94	12	2.36	1.74
Connections with suppliers	14	1.92	1.08	16	2.06	1.34	14	2.25	1.14	14	2.21	1.63
Number of projects	12			17			12			14		

Table 4b: Factors Affecting the Initiation of a Project, by Field

Factors	Hardware, Communication, and Electronic Components			Optical and Precision Equipment			Biotechnology			Energy and Ecology			Software		
	Rank	Score	S.D.	Rank	Score	S.D.	Rank	Score	S.D.	Rank	Score	S.D.	Rank	Score	S.D.
Financial support	3	4.57	0.53	2	4.38	0.74	1	4.94	0.24	1	4.58	0.67	1	4.50	0.97
Networking with strategic partners	2	4.71	0.49	2	4.38	0.92	3	4.41	0.62	3	4.25	0.45	3	3.90	0.99
International collaborators	1	4.86	0.38	4	4.25	0.71	5	4.24	0.90	4	4.08	0.79	2	4.30	0.82
Links to financial sources	2	4.71	0.49	1	4.75	0.46	2	4.76	0.75	2	4.33	0.65	1	4.50	0.53
Legal counseling	5	4.14	0.69	5	4.00	1.07	5	3.76	1.03	11	2.83	1.34	8	2.80	1.14
Marketing	4	4.43	0.79	3	4.63	0.52	4	4.29	1.10	4	4.08	1.24	3	3.90	1.10
Strategic counseling	2	4.71	0.49	6	3.88	1.13	5	3.76	1.25	5	3.75	1.22	7	2.90	1.20
IPR Protection	6	4.00	1.00	7	3.63	1.41	5	3.76	1.35	8	3.50	1.38	7	2.90	1.60
Networking of plants	8	3.29	1.25	8	3.50	1.20	6	3.35	0.93	7	3.58	1.00	5	3.10	1.73
Professional network	11	2.86	1.07	11	2.88	1.36	8	3.12	0.99	10	3.08	1.51	6	3.00	1.56
Access to labor pool	7	3.43	0.79	10	3.13	1.46	9	2.94	1.52	13	2.25	1.48	9	2.70	1.49
Management support	11	2.86	1.35	11	2.88	1.36	7	3.29	1.26	12	2.58	1.31	9	2.70	1.70
Source of technological information	10	3.00	1.15	10	3.13	1.13	11	2.82	1.01	9	3.17	1.11	5	3.10	1.37
Market information	3	4.57	0.79	5	4.00	0.93	6	3.53	1.12	6	3.67	1.07	4	3.30	1.49
Access to inputs	13	2.57	1.51	13	2.50	1.51	13	2.00	0.94	16	1.75	1.06	11	1.90	1.20
Available suitable space	12	2.71	1.25	12	2.63	0.92	10	2.88	1.32	15	1.83	1.03	10	2.40	1.51
Advanced studies and re-training	7	3.43	0.79	9	3.38	1.41	11	2.82	1.33	15	1.83	0.94	10	2.40	1.17
Connections with suppliers	9	3.14	1.21	13	2.50	1.07	12	2.41	1.18	14	2.00	1.28	10	2.40	1.35
Number of projects	7			8			17			12			10		