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2012

The role of organizational culture in Greek businesses

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Abstract

Purpose – This paper seeks to contribute to an understanding of the organizational culture of the spin-off knowledge-based enterprises, which operate within the science and technology parks in Greece. In this context, a critical number of questionnaires have been distributed to the spin-offs to examine whether firms born within the parks have developed a functional organizational culture, one that provides a solid foundation for organizational effectiveness and business excellence.

Design/methodology/approach – The Organizational Culture Assessment Questionnaire (OCAQ) was developed by Sashkin to help people identify and understand the nature of the culture in their own organization, as a first step in identifying problems and defining the sort of culture they want (and the sort of culture that will help deal with organizational problems). The data for the present study were obtained by the OCAQ mailed to a sample of 33 spin-off companies that operate within the aforementioned science and technological parks. The mailing consisted of the questionnaire itself, a cover letter, and a stamped pre-addressed return envelope. Of the 90 questionnaires mailed after phone contact, 33 were received, representing a 37 percent response rate.

Findings – There seems to have been ascertained serious organizational culture weaknesses regarding management of change practices, goal and customer orientation, cultural strength and efficient team working. It is of critical importance for policy makers to set general principles, guidelines as well as organizational reform measures and priorities to achieve better efficiency and effectiveness of spin-offs in Greece and approach business excellence. Finally, implications for theory, managers and future research are presented.

Originality/value – This paper provides useful information on organizational culture assessment.

Keywords Organizational culture, Science and technology parks, Science parks, Business excellence, Greece

Paper type Research Paper

1. Introduction

After the Bretton Woods system collapsed in the early 1970s and as, at the same time, the rigid Fordist mass production-mass consumption model was reaching its limits, a new mode of business organization began gradually to make its appearance based on flexibility in production and distribution (Piore and Sabel, 1984). The most distinctive characteristic of the so-called "flexible production" or "flexible business" systems was the encouragement, if not necessity, for close links between enterprises and research institutes and universities. That was a critical break up with the "Fordist" past where industries and universities were quite separate fields of activities, representing organizations with quite different and separate roles within the socio-economic system. However, the new "flexible paradigm", encouraging team working and polyvalence in skills, needed highly educated workers, ready to execute diversified and high quality

tasks, often changing rapidly working positions. With the appearance of the so-called "new economy" and the new generation of "flexible technologies", the co-operation of firms with research institutes and universities became a necessary prerequisite to pursue competitiveness in an increasing globalized market.

Although Greece is lagging behind the EU average in all other innovation dimensions. The rate of annual growth of innovation improvement is remarkable, and can be interpreted mainly as a result of science park's spin-off enterprises, which now, many of them, enjoy international reputation (Ministry of Development, General Secretariat for Research and Technology, 2000).

The authors take the very realistic hypothesis that for the country's innovation performance in general, the existence of a quality organizational culture in the future is of critical importance. After all, innovation is all about ideas put into practice and become the engine of productivity increase and competitiveness. For an innovative idea it is of critical importance to find a fertile ground (i.e. a quality organizational culture), to flourish and transform to a market value.

Henceforth, in the 1980s and 1990s, governments initiated the implementation of policies to encourage tighter links between research and production, through financing relevant infrastructure as well by promoting, through institutional measures, the development of "science and technological parks", in an effort to have regions of high rates of productivity and growth. The development of flexible, knowledge-based companies within the parks, the so-called "spin-offs" based in a location linked to a centre of technological excellence became the primary target of national industrial and public policies, especially in the EU-member states.

That is because science parks are said to facilitate:

- flexibility in production, new industrial activities, modernization and internationalization of enterprises through technology transfer;

- accumulation of technologies and of core activities in a region;

- close links between universities and industries or small enterprises, in order for the construction of co-operation and communication networks; and last but not least

- culture of excellence in organization and innovation, as well as selectivity and competition.

However, science parks were originally an American phenomenon dating back to the 1960s, devised to meet the needs of entrepreneurial-minded academics. In Europe, the science park "movement" made its appearance first in the UK in 1971 with the formation of parks at the Heriot-Watt University and at Cambridge University (The British Council, 1999).

Research and technological poles have been also set up in Greek regions but only in the late 1980s, introducing local economy into the modern international competitive environment. These infant cores of innovation have already inspired both academics and entrepreneurs to construct new models of investment planning and production. Although not yet fully developed, some of them, they have already created complex links between universities and industries, giving birth to many spin-off knowledge-based enterprises.

A firm's organization quality and culture is one of the pillars of success in international competition. This paper focuses on examining the quality of organizational

culture of the spin-off knowledge-based enterprises, within the Greek science and technology parks, as the authors consider organizational culture as the cornerstone of business excellence and international competitiveness. The main objective of the authors is to help policy makers to set general principles, guidelines as well as organizational reform measures and priorities to achieve better efficiency and effectiveness of spin-offs in Greece and approach business excellence. The study also includes firms that have lately exited the parks but still have a close co-operation with them. In the following Section 2 the paper focuses on the fieldwork and analyses its results. In this context, a critical number of questionnaires have been distributed to the spin-offs and the data collected were analysed quantitatively to examine whether firms born within the parks have developed a functional organizational culture, one that provides a solid foundation for organizational effectiveness and business excellence. Results are analysed in the same section. The Section 3 of the paper proposes the necessary policies for the Greek science parks to overcome organizational culture problems and approach business excellence and international competitiveness.

2. Field work
2.1 Organizational culture and performance

The term culture refers to a set of beliefs, values and behaviours held by a society (Lim, 1995). Uttal (1983) defined culture as a "system of shared values (what is important) and beliefs (how things work) that interact with a company's people, organizational structures, and control systems to produce behavioural norms". Cameron and Freeman (1991) proposed the following framework of four organizational culture types: market, clan, adhocracy and bureaucratic hierarchy. Each culture type is characterized by a particular set of shared beliefs; style of leadership, set shared values that act as a bond for all employees within the company. The market culture emphasizes a goal-oriented enterprise, competitive actions and achievement. The "clan" culture is characterized by a personal place and emphasizes human resources. The "bureaucratic hierarchy" culture is characterized by a formalized, structured places held together by formal rules and policies emphasizing stability. Finally, the "adhocracy" culture emphasizes a dynamic entrepreneurial place held together by a commitment to innovation and development. Most companies have elements of several types of cultures. Lund (2003) examined the impact of organizational culture types on job satisfaction of firms in the USA using the model of organizational cultures developed by Cameron and Freeman (1991). The author identified that job satisfaction was positively related to clan and adhocracy cultures and negatively related to market and bureaucratic hierarchy cultures.

Hofstede (1980) stated that culture accounts for the economic performance of various countries. Schein (1990) suggested that the idea of corporate culture provides a basis for understanding the differences that may exist between successful companies operating in the same national culture. Peters and Waterman (1982) found out that successful companies possess certain cultural traits of business excellence. Ouchi (1981) reported a relationship between corporate culture and increased productivity while Deal and Kennedy (1982) argued for the importance of a "strong" culture in contributing towards successful organizational performance. Kotter and Heskett (1992) examined how changing environments affected culture and performance, and found that companies with consistently good economic performance over time tended to possess core values that emphasized the importance of an adaptive culture. They also suggested that culture might only be an intermediary of the impact of effective

leadership on organizational performance. A number of studies alleged the presence of a "strong" culture as a positive influence on organizational performance (Sadri and Lees, 2001). Henceforth, after reviewing in brief the relevant literature one can easily accept that, while culture is not the only determinant of business success or failure, a positive culture can be a significant competitive advantage in the post-Fordist, flexible age. So, let us now embark on the Greek science parks and the relevant fieldwork we worked out to examine organization culture within them.

Organizational culture is the values and norms which channel the actions, manners, behaviour and attitudes of all employees in the enterprise. Baumgartner and Zielowski (2007) argued that organizational culture has a significant effect on an enterprise's competitiveness as measured by performance indicators such as quality, reliability, efficiency, customer service, effectiveness, innovation, etc.

Due to the fact that organizational culture determines how employees communicate within the enterprise and guide their actions, Engelhard and Nagele (2003) concluded that organizational culture is one of the most important issues in managing contemporary organizations.

Cameron and Quinn (1999) have found that the main competitive advantage of a company is its organizational culture. A high level of corporate performance is closely related to a "strong" culture which contains values, beliefs and norms.

Organizational culture has been connected to financial performance of the firm and its viability and future success (Devis, 2007; Sorensen, 2002).

Kotter and Heskett (1992) stated that companies with visionary leaders who have created an organizational culture based on a set of core values, are more financially successful in the long term.

Organizational culture is also important for new product and process innovation and organizational change (Plakhotnik and Tonettee, 2005 cited in Olu, 2009).

2.2 Research method: research instrument
The Organizational Culture Assessment Questionnaire (OCAQ) was developed by Sashkin (1996) to help people identify and understand the nature of the culture in their own organization, as a first step in identifying problems and defining the sort of culture they want (and the sort of culture that will help deal with organizational problems). The data obtained by means of the OCAQ can be used to identify ways to deal with culture-based organizational problems.

The OCAQ is based on the work of Dr Talcott Parsons, a sociologist at Harvard. Parsons developed a framework and theory of action in social systems. He argued that all organizations must carry out four crucial functions if they are to survive long term. These five functions are, first, managing change: Scale I of the OCAQ assesses the degree to which respondents see the organization as effective in adapting to and managing change; second, achieving goals: Scale II of the OCAQ asks respondents to describe how effective the organization is in achieving goals; third, coordinated teamwork: OCAQ Scale III assesses the extent to which an organization is effective in coordinating the work of individuals and groups; fourth, customer orientation: Scale IV of the OCAQ assesses the extent to which organizational activities are directed towards identifying and meeting the needs of customers; and fifth, building a strong culture: Scale V of the OCAQ assesses the strength of the organization's culture, asking respondents to report on the extent to which people agree on values and examining the extent to which certain "meta values" are present such as the belief that people should support their views with facts.

Each of five OCAQ scales has six items, with each item score ranging from 1 (low or poor) to 5 (high or good) and thus, the total score of the OCAQ can be as low as 30 or as high as 150. Sashkin (1996) has developed a table of norms (Table I) showing what scores on each scale are high and what sorts of scores are low. Sashkin (1996) mentioned that the table of norms should be seen as suggestive, not as absolutely defining what is high and what is low.

2.3 Sample and data collection
Based on the critical role of science and technology parks for innovation performance, the Greek General Secretariat of Research and Technology, funded the establishment of the Greek technology parks, namely: the Crete Science and Technology Park[1] (STEP-C), in an island at the very south of Greece, the Thessaloniki Technology Park (TTP)[2], a very well-developed initiative in the north, the Patras Science Park[3] in west-central Greece and the Volos Science Park[4] in the central Greece (Thessaly region). In these science parks operate approximately 90 spin-off enterprises. The data for the present study were obtained by a sample of 33 spin-off companies that operate within the aforementioned science and technological parks.

The mailing consisted of the questionnaire itself, a cover letter, and a stamped pre-addressed return envelope. As response inducement, each respondent was promised a copy of the study results on request. Of the 90 questionnaires mailed after phone contact, 33 were received, representing a 37 per cent response rate. After the questionnaires were collected, the data from each were entered into the statistical testing programme, the Statistical Package for the Social Sciences, Version 13.

2.4 Results
Table II presents a summary of respondents' mean scores as well as the total score for all companies involved in this study. Regarding managing change, the mean score is 15.82 and is considered low compared to the corresponding mean of the table of norms. According to Sashkin (1996), this area of action concerns how well the organization is

	Managing change	Achieving goals	Coordinated teamwork	Customer orientation	Cultural strength	Total
Very high	30	28-30	28-30	25-30	26-30	119 +
High	26-29	23-27	24-27	21-24	22-25	108-118
Average	19-25	16-22	18-23	15-20	17-21	87-107
Low	15-18	11-15	14-17	11-14	13-16	76-86
Very low	6-14	6-10	6-13	6-10	6-12	30-75

Table I.
OCAQ norms

	Managing change	Achieving goals	Coordinated teamwork	Customer orientation	Cultural strength
N	33	33	33	33	33
Mean	15.82	15.03	13.96	13.51	13.67
SD	2.25	2.49	3.35	2.79	3.37

Note: Total score: 71.99

Table II.
Results of the study

able to adapt to and deal effectively with changes in its environment. All organizations are open, to some extent, to rapid technological and social change.

The mean score for "achieving goals" is 15.03 and it is considered low compared to the corresponding mean of the table of norms. Sashkin (1996) stated that having a clear focus on explicit goals as been proven repeatedly to have a very strong relationship to actual success and achievement.

"Regarding coordinated teamwork", the mean score is 13.96, again low compared to the corresponding mean of the table of norms. Sashkin (1996) believes that long-term organizational survival depends on how well the efforts of individuals and groups within the organization are tied together, coordinated and sequenced so that people's work efforts fit together effectively.

The mean score for "customer orientation" is 13.51 and is considered low compared to the corresponding mean of the table of norms. Sashkin (1996) argued that no matter how strong the culture and no matter how well the other functions of the organization are performed, if no one wants what the organization produces, then the organization is not likely to survive and prosper.

Finally, the mean score for "cultural strength" is 13.67, again low compared to the corresponding mean of the table of norms. Sashkin (1996) stated that a strong culture based on values that support the functions of managing change, organizational achievement, customer orientation and coordinated teamwork, would provide greater stability of organizational functioning.

The total score 71.99 is very low compared to the corresponding one of the table of norms. However, Sashkin (1996) stated that the OCAQ is intended as a diagnostic aid, a first step in building better functioning organizational cultures. Through the OCAQ the company's management can probably get some feeling for what sort of numbers are "high" and what might be considered "low" from looking at Table I. Most important is that the items that make up the scales provide concrete directions about what an organization might actually do to improve its culture.

Pearson product moment correlation coefficient (r) was employed for correlational analysis. The coefficient of determination was used to measure the meaningfulness of the relationship.

Pearson correlations (r) as seen in Table III, ranged from 0.39 to 0.92 which means from moderate to very strong. All correlations were positive and statistically significant either at the 0.001 or 0.05 level meaning that none of them were spurious. Coefficients of determination (r^2) ranged from 0.15 to 0.85 which means that a quite good to a significant percentage of variance in the DV is account for by the IV.

In particular, through correlational analysis, a positive correlation emerged between the following functions of organizational culture: "cultural strength" and "coordinated teamwork" ($r = 0.84$, $p = 0.000$); "customer orientation" and "coordinated teamwork" ($r = 0.75$, $p = 0.000$); "cultural strength" and "achieving goals" ($r = 0.65$, $p = 0.000$); "customer orientation" and "cultural strength" ($r = 0.66$, $p = 0.000$); "achieving goals" and "managing change" ($r = 0.62$, $p = 0.000$); "managing change" and "cultural strength" ($r = 0.60$, $p = 0.000$); and "coordinated teamwork" and "achieving goals" ($r = 0.60$, $p = 0.000$).

3. Conclusions, discussion, implications and recommendations for further research

In this paper, the authors examined the organizational culture of spin-off firms located in the Greek science and technological parks. A critical number of questionnaires have

	Change	Goals	Teamwork	Customer	Strength	Total OC score
Change						
Pearson correlation		0.623**	0.409*	0.388*	0.600**	0.695**
Significance (two-tailed)		0.000	0.018	0.026	0.000	0.000
r^2		0.39	0.17	0.15	0.36	0.48
Goals						
Pearson correlation	0.623**		0.591**	0.542**	0.645**	0.802**
Significance (two-tailed)	0.000		0.000	0.001	0.000	0.000
r^2	0.39		0.35	0.29	0.42	0.64
Teamwork						
Pearson correlation	0.409*	0.591**		0.749**	0.835**	0.893**
Significance (two-tailed)	0.018	0.000		0.000	0.000	0.000
r^2	33	0.35		0.56	0.69	0.79
Customer						
Pearson correlation	0.388*	0.542**	0.749**		0.655**	0.816**
Significance (two-tailed)	0.026	0.001	0.000		0.000	0.000
r^2	0.15	0.29	0.56		0.43	0.67
Strength						
Pearson correlation	0.600**	0.645**	0.835**	0.655**		0.919**
Significance (two-tailed)	0.000	0.000	0.000	0.000		0.000
r^2	0.36	0.42	0.69	0.43		0.85
Total OC score						
Pearson correlation	0.695**	0.802**	0.893**	0.816**	0.919**	
Significance (two-tailed)	0.000	0.000	0.000	0.000	0.000	
r^2	0.48	0.64	0.79	0.67	0.85	

Notes: **Correlation is significant at the 0.01 level (two-tailed); *correlation is significant at the 0.05 level (two-tailed)

Table III.
Correlations between all factors of organizational culture (OC) and the total score of OC

been distributed to examine whether firms born within the parks have developed a functional organizational culture, one that provides a solid foundation for organizational effectiveness, competitiveness and business excellence. All organizations have a culture based on values and beliefs usually shared by some, most or all of the organization's members (Sashkin, 1996). However, according to the results obtained through the implementation of quantitative analysis in the data collected from the fieldwork study, there seems to have been ascertained serious organizational culture weaknesses regarding management of change practices, goal and customer orientation, cultural strength and efficient team working. It is noted that when the culture is based on values that do not fully support the functions of managing change, goal achievement, customer orientation and coordinated teamwork, as is the case of the Greek spin-offs, then this culture might actually hamper organizational survival and growth. The present study has found a positive correlation between organizational culture and customer orientation, teamwork, goal achievement and change, supporting the findings of other similar studies (Sadri and Lees, 2001; Baumgartner and Zielowski, 2007; Cameron and Quinn, 1999; Kriemadis and Papaioannou, 2006; Kriemadis et al., 2009). It follows that policy makers have to innovate strategic reform paths and specific appropriate policies to overcome organizational malfunctioning. Henceforth, it is of critical importance for policy makers to set general principles, guidelines as well as organizational reform measures and priorities to achieve better efficiency and effectiveness of spin-offs in Greece.

For that reason we summarize the main policies and measures that we believe are appropriate for the Greek spin-offs to face their weaknesses resulted from our statistical analysis.

Let us first embark on the issues of effective management of change and goals achievement. Five methods are usually met in the literature as commonly used by management to pursue the appropriate reforms to successfully achieve goals (Williams *et al.*, 1993):

(1) changing "human resource" management policies and processes, management style and work environment;

(2) training employees in new skills and thus influencing their job attitudes;

(3) providing employees with training and role models appropriate to the desired culture, a culture that supports change, organizational achievement, customer orientation and coordinated teamwork;

(4) greater emphasis on selecting people with the desired attitudes as well as technical skills and experience. This may include the use of more sophisticated selection techniques, for example, psychometric testing, assessment centres and biodata; and

(5) moving people into new jobs to break up old sub-cultures.

Accordingly, the organization may use the following strategies to meet customer needs, as Whiteley (1991) has identified:

(1) information from customers should be used in designing products/services;

(2) the organization regularly asks customers to give feedback about its performance (satisfaction measures look at the extent to which customers are satisfied with the service they have received);

(3) customers' complaints are regularly analysed in order to identify quality problems;

(4) internal procedures and systems that do not create value for the customers are eliminated;

(5) employees are encouraged to go above and beyond to serve customers well;

(6) employees who work with customers are supported with continuous training and resources that are sufficient for doing the job well; and

(7) employees are empowered to use their judgement when quick action is needed to make things right for a customer.

Working as a team is a natural human behaviour that enhances cultural strength and the spirit of unity within the shop floor as well as among worker diminishing, at the same time, transaction costs. Everyone acts as part of a team, for the good of the entire organization, minimizing, simultaneously, cases where competition inside an organization structure that functions counterproductively. Verespej (1990) stated that the most important benefits to working in teams are:

(1) improved involvement and performance;

(2) positive morale; and

(3) sense of ownership and commitment to the product/service that teams create.

The establishment of quality circles is a good example of teamwork. Quality circles consist of small groups of employees who meet to uncover and solve work-related problems. Members get together regularly to learn interpersonal skills and statistical methods associated with problem solving and to select and solve real problems. Members meet an hour a week both during regular and outside of regular working hours. A group leader chairs meetings. The leader is a discussion moderator who facilitates the problem-solving process. Problems are not restricted to quality, but also include productivity, cost, safety, morale, environment and other topics (Crocker *et al.*, 1984).

As the results of the fieldwork have indicated, spin-off firms of the Greek science and technological parks need to adopt new management approaches and systems in attempting to change and manage effectively their organizational culture. If so, the authors argue that they should take seriously into account the general rules, guidelines and prescriptions extracted from the relevant literature and presented above. Indeed, those specific elements of organizational culture such as customer focus, teamwork and goal achievement are stronger in organizations practicing total quality management (Gore, 1999). Many researchers have also indicated that the implementation of a total quality management system could contribute to the enhancement of an organization's efficiency and effectiveness and drive the organization to business excellence (Chen, 1994; European Foundation for Quality Management, 1995; Green, 1994).

It is also important to point out that changing an organization's culture is a long-term endeavour. During this process, communication with all employees and stakeholders plays an important role in changing an organization's culture. Allowing employees to participate and get involved in making the changes in the culture can have a very positive impact and may facilitate the process of change. The authors also believe that relevant regional and sectoral studies need to be elaborated to determine and suggest appropriate policy measures that take advantage, transform or restructure if necessary, existing business policies and practices towards, goal orientation, customer-driven functions, modern team working and effective culture unity, within each park and even within each spin-off firm, if possible. It is of cardinal importance the very first organizational strategy and capabilities an infant spin-off adopts at the time of start-up. Henceforth, it is crucial for the science parks to transmit from the very first moment, the right incentives to an infant but potentially promising spin-off.

Based on the findings of this study, the following recommendations are offered for future research:

(1) Follow-up studies should be done to the same population in three to five years to investigate possible changes in organizational culture.

(2) Research needs to be done to the same population to assess qualitatively the organizational culture. Qualitative studies rely on data obtained from interviews, observations and the study of official documents.

(3) A useful investigation might also be undertaken to assess the relationship between the organizational culture and the financial performance or productivity of these spin-offs. It would be necessary to establish which measures of financial performance or productivity would be appropriate.

(4) Finally, future research should be designed to establish the validity and reliability of an organizational culture survey instrument which could be used in any spin-off operated in the Greek science and technology parks.

3.1 Delimitations

The study was delimited to spin-off enterprises that operate within four of the most important science and technological parks in Greece. Data for this study were only collected from these four science and technological parks and there was no attempt to generalize this information to the remaining Greek science and technological parks.

The study was also delimited to a questionnaire designed to collect data regarding organizational culture activities in businesses. More specifically, the questionnaire was appropriate for identifying the following functions of organizational culture in businesses: managing change; achieving goals; coordinated teamwork; customer orientation; and cultural strength.

3.2 Limitations

The following were acknowledged as limitations of the study:

(1) the honesty, accuracy and objectivity of the respondents when completing the questionnaire;

(2) the respondent's level of understanding of the organizational culture vocabulary; and

(3) the respondent may not be the person to whom the questionnaire was addressed.

3.3 Basic assumptions

(1) Organizational culture is an essential function of every organization which aspires for successful organizational performance.

(2) The questionnaire developed by Sashkin (1996) was appropriate for identifying the fundamental functions of organizational culture in businesses.

(3) The respondents were the most qualified managers in their respective companies to complete the questionnaire.

Notes

1. The science and technology park of Crete established in 1993, it was inspired to promote the creation of a third thrust of development on the island, in addition to the agriculture and tourism industry. The EU as well as the local and central government funds supported the development of the park during the early 1990s. The managing company of STEP-C (EDAP S.A) was established in December 1993 with FORTH as its main shareholder (35 per cent). STEP-C gears itself to become an ever increasing attraction as an incubator, nurturing spin-offs and small innovative companies in the areas of medical equipment, biotechnology, telecommunications, telematics and teleworking, microelectronics and laser applications, polymers and applied mathematics, which are key strength areas of FORTH and the UoC. The park focuses on technology transfer, incubation facilities and promotion of the park products. One of the key objectives of STEP-C is the transfer of deliverables of research and other activities to the industry. STEP-C has developed incubation facilities through various projects financed by the Greek Ministry of Development. Today there are 25 companies, which reside within the park premises in the areas of information technology, biotechnology, environmental technology, laser applications, biomedical technology and services. The park also developed co-operation and bilateral relations with the main local actors in the field of education, science and technology and business as well as with the regional authorities. The science and technology park of Crete, known to many by one of its key activities as the Heraklion Incubator, is today the leading park in the country, with promising perspectives.

2. TTP was established in 1988, to meet the need for greater exchange of ideas, people and facilities between universities and industry. In 1994, the TTP Management and Development Corporation (TTP/MDC S.A.), a separate company, was created with the participation of FORTH/CPERI and major industries of central Macedonia. The company promoted and enhanced the activities of the Thessaloniki's Technology Park in close co-operation with the association of industries of northern Greece, and with the University of Thessaloniki.

"The Center for Research and Technology Hellas" promotes activities, which contribute to the increase of competitiveness of Greek industry with special emphasis on chemical technology (specialized software for polyethylene and propylene production facilities, environmental friendly catalyst for production of fuel, etc.), food and beverage, textiles and energy and environment. Furthermore, TTP/MDC identifies present, future and latent industry needs within northern Greece and links them with technological innovation. It promotes technology transfer among Greece, the EU, the USA, eastern Europe and the Balkans and co-ordinates the Greek-American initiative for technology co-operation with the Balkans. This is being accomplished through organization, implementation and participation in national and European training programmes and workshops on the use of technologies. It also serves as industry – research liaison, performs partner searches, executes assessment and exploitation of research results, assists with RTD proposal preparation, submission and project management. Furthermore, it ensures information dissemination concerning research results, technological developments and the emergence of new technologies. Technology brokerage, technology search and assessment, assistance for technology implementation are also provided. Finally measurements and testing quality control through promotion of analytical services are also undertaken.

3. Patra's Science Park, mainly still under construction, was founded in 1989. It is interested in business exploitation of R&D results, with emphasis on new innovative technology-based companies. In addition, it concentrates on R&D – production liaison, promotion of innovation, linking of finance innovation and also activities outside the park aiming at: enhancement of competitiveness and construction of an environment favoring innovative developments in the area.

4. The technological park of Volos (Thessaly) was founded in November 2001. Taking advantage of the Volos' industrial area, the aim of the technological park is to provide facilities to knowledge-based enterprises that are located in the greater Thessaly region, to connect them with the Polytechnic University of Volos and to give birth to new spin-offs in industrial sectors and fields. The "parks is a S.A." and its among shareholders are 39 modern firms, the University of Thessaly and the local authorities.

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