

# ADVANCES IN BUSINESS-RELATED SCIENTIFIC RESEARCH JOURNAL



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## EXECUTIVE SUCCESSION: AN ASSESSMENT OF NONPROFIT RESEARCH

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### **Abstract**

Despite its importance to the nonprofit sector, discussion of and research on executive succession appears infrequently in the academic literature. Accordingly, we conducted a comprehensive search of the extant literature in order to identify case studies on this issue, and to analyze the key findings and themes appearing in these cases.

Most published research focuses on U.S. nonprofit organizations and are single case studies. On the one hand, some common themes and findings appear in several cases, and on the other hand, some cases focus on a singular theme. International and U.S. case studies are compared to determine similarities/differences.

Recommendations include: that researchers adopt the case study method as a research strategy when investigating executive succession in nonprofits; that U.S and international researchers include multiple case analyses as part of their research agenda; and that researchers conduct cross cultural research to determine similarities/differences between countries.

Keywords: case study, international, nonprofits, organizations, succession, transitions

Topic Groups: human resource management and career development, research methods

## **INTRODUCTION**

Nonprofit organizations are in the midst of a serious leadership crisis which will create a tremendous shortage of nonprofit sector leaders within the next five years (Tierney, 2006; Toupin & Plewes, 2007; Casner-Lotto, 2007). Given such a dire prediction, it would seem logical that nonprofits have a succession plan to fill executive vacancies. Yet, these organizations continue to operate as usual and fail to plan for succession in any structured and systematic way (Santora & Sarros, 2001a). Recently Toole (2008) found that only five percent of nonprofits he surveyed had such a plan. Hrywna (2008) found that slightly more than 25 percent of the respondents to his survey had a succession plan. Unfortunately, these dismal survey findings are not much better than the results of similar surveys conducted more than a decade ago (see Sinclair, 1996). Without adequate succession plans some nonprofits may encounter organizational disruptions, and in some cases, may be forced to close their doors (See Metelsky, 2004; Price, 2008). Therefore, succession "remains a challenge to not-for-profit organizations of all types" (Bear & Fitzgibbon, 2004:103).

Our study was inspired by the current and potential problems in leadership and succession in nonprofit organizations. Accordingly, our review of the case study literature in this sector was an attempt to identify any similarities and/or differences in these cases and to further clarify the nature of leadership succession in the nonprofit sector.

We begin our paper with a rationale for using the case study method to collect data on nonprofit executive succession, provide a description of our data collection methods, identify each case study (including a description), and report on their key findings. In our discussion section, we present our findings by theme and geographic areas. Next, we offer recommendations for future study, and finally we draw some conclusions based on our analysis of these cases.

This paper contains several limitations: first, the generalizability (external validity) issue of single case studies and their findings; the selected use of non-profit executive directors and their organizations; and few international executive succession cases.

## **RATIONALE FOR THE CASE STUDY METHOD AND EXECUTIVE SUCCESSION**

Despite any limitations associated with the case study method, Pitcher, Chreim and Kisfalvi (2000: 646) advocate using case studies to complement other research methods: "We believe these cases demonstrate that fieldwork can help large-sample researchers to understand otherwise perplexing results and to refine both their hypotheses and their measurements". Several researchers have called for case study research to investigate succession (e.g., Kesner & Sebora, 1994; Sharma, 2004). Poulin, Hackman and Barbarasa-Mihai (2007:303) ask researchers to expand the use of case studies when investigating leadership succession issues: researchers should "pursue basic questions on leadership succession by, for example, using more longitudinal, qualitative case-based research". We

concur with both sets of authors, and we would like to add that while large samples indeed provide some interesting results about succession issues, the results mined from case research offer a richer and more intimate understanding about the executive succession process and its antecedents and consequences than is offered through more quantitative research methods.

Despite its limitations, we recognize the utility of the single case study as a learning device for an organization (see March *et al.*, 1991; Kennedy, 1979), and as a way for researchers who are “concerned with gaining an understanding of a particular person, group, or organization” (Herbst, 1970: ix). With respect to the external validity issue, we suggest that researchers follow Yin’s (1989) model for multiple case study to help reduce any concerns about case study research and issues of external validity (see Eisenhardt, 1989).

## **METHODS AND DATA COLLECTION**

To collect data we identified peer-reviewed journals that devote themselves to the nonprofit audience (e.g., Administration in Social Work, Nonprofit and Voluntary Sector Quarterly, Nonprofit Management & Leadership, Voluntas: International Journal of Voluntary and Nonprofit Organizations) as well as organizations that support the publication of nonprofit research (e.g., The Support Center for Nonprofit Management [New York], CompassPoint Nonprofit Services [San Francisco], and the Annie E. Casey Foundation [Baltimore, Maryland]). We conducted an Internet search (Google and Google Scholar) using key words and phrases (e.g., executive succession, nonprofit organizations, nonprofit succession and case study research) to assist us. Our Google searches led us to a number of surveys and a few graduate theses as well as peer-reviewed articles. We also consulted several databases of the literature (e.g., ABI/Inform Complete (ProQuest) (full access to more than 2,100 business periodical titles) and Business Source Premier (full access to more than 1,100 scholarly business journals) for possible additional articles. Finally, we reviewed forthcoming articles and working papers on executive succession in nonprofits. Our search resulted in 18 case study articles on succession in nonprofits from 1965 to date. Of these 18 cases, 13 were single case studies and five were multiple case studies. Fourteen (14) cases were based on research conducted within the continental US, while four (4) cases were non-USA based.

## **FINDINGS**

### **SUCCESSION CASES IN NONPROFIT SECTOR ORGANIZATIONS**

Table 1 offers a brief overview of the study, a description of each case and the key findings of the 18 nonprofit cases. In general, these key findings for U.S. and non-USA based cases focused on various factors (e.g., succession processes, influence, stages/phases of succession/ transition, no succession plan, etc.). Table 2 extends those brief descriptions by categorizing the 18 cases into one of 17 themes that occurred most commonly in one or more of the cases under review.

## **DISCUSSION**

Table 1 provides a brief overview of the findings of the nonprofit sector cases on succession. Most cases (13 or 72%) were single cases and 5 (or 28%) were multi-cases. Table 2 extends those brief descriptions by categorizing the 18 cases into one of 17 themes/factors. In several instances a case study falls under several themes/factors based on the similarity of its research findings with other cases. Themes were identified through the following iterative

process. The key findings from each of the papers reviewed in this paper were identified by the authors who then independently aggregated the findings into key terms. Further reading and classification of the findings occurred until the final set of key themes emerged. An inter-rater reliability of .90 was established based on this procedure (Goodwin & Goodwin, 1985). We list themes based in order of frequency of mention based on the content analysis discussed above: similar findings from most (eight) to least (1). There were six rankings (8, 6, 4, 3, 2, and 1). "Founder Issues/Insiders" appears first since this theme/factor appeared within eight (8) cases; "Insiders" and "Leadership Styles" are second as these themes appeared in six cases; "Follower Issues" were listed third since this theme/factor appeared within four (4) cases. The themes/factors of "Phases/Stages," "Succession Processes," "Politics/Influence," "Change," "No Succession Plan," "Outsiders" and "Succession Plan in Place" were ranked fourth and appeared in three (3) cases. The themes/factors "Consequences," "Succession Models," "Values," and "Interim Directors" and "Disruption" was ranked fifth and appeared in two cases. Finally the theme/factor of "Innovation" appeared last and appeared in one case. Each theme was then examined retrospectively to identify the core elements of succession in nonprofits that account for the nature of that theme.

A limitation of our discussion is that we discuss those themes only where the findings shed significant light on a particular theme (see "Founder Issues" below). On the other hand, some themes/factors (e.g., "Consequences," "Succession Models," "Values," "Interim Directors," "Disruption," and "Innovation"), provided too few details for discussion and were therefore not addressed in this paper. For example, Santora et al (2010) and Zald (1965) alluded to the disruption created by the succession issue and innovation respectively in the organizations they studied. The theme of "Founder Issues" was the dominant theme in the literature appeared in eight studies (six US and two international). In both US and international nonprofits, founders refused to "let go" (see Comini & Fischer, 2009), insisted on selecting their successors, and remained on the board of the organization (see Gilmore & Brown, 1985/1986) and assumed a non-executive director position within the organization (see Santora & Sarros, 2009). "Insiders" (those currently employed by the organization) and "Leadership Style" appeared in six cases respectively, appearing in four US cases and two international cases for "Insiders", and five US cases and one international case for "Leadership Style". The data also tell us that US and international nonprofits (see Comini & Fischer, 2009; Markham, Walters, & Bonjean, 2001) organizations were inclined to select insiders as successors. Perhaps the reigning philosophy, "better the devil you know than the one you don't know" is in play here, or perhaps is the extension of a founder's legacy philosophy. Or is this approach specifically US-centric? Are US nonprofits more likely to appoint insider successors because they believe any outside option does not meet their rigorous selection criteria? Obviously more international research on this issue is warranted. On the other hand, three cases (two US and one international) focused on "Outsiders" (those not currently employed by the organization and recruited externally) and found that outsiders were preferred over insiders (e.g., Santora & Sarros, 1997), and second and perhaps more importantly, there was no room for inside successors (See Santora & Sarros, 2001a) because outsiders brought with them a host of skills and competencies, such as fundraising and extensive networks, that insiders did not. More research is needed on the sorts of skills and competencies outsiders bring to a new appointment that insiders apparently cannot match. There are inconsistencies in the literature about succession planning. For example, in the three "No Succession" cases (Santora & Sarros, 1995; Santora et al, 1997; and Santora et al, 2010), organizational leadership did not have a formal succession plan. These findings are consistent with the findings of most nonprofit surveys on succession (see Toole, 2008).

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Table 1: Nonprofit Organizations Cases

<b>Study</b>	<b>Description of Case</b>	<b>Key Findings</b>
1. Zald (1965)	1 large welfare agency (USA)	Succession processes and politics, influence of CEO, insiders as successors, successor continues innovation practices
2. Smith/Moschel (1973)	1 nonprofit family agency (USA)	Longtime executive departs, replaced by interim executive (who was an employee and board member), appointment of permanent successor and subsequent organizational changes
3. Gilmore/Brown (1985)	1 small nonprofit (USA)	Seven stages of the leadership transition process during departure of founder; critical issues; insider/outsider as replacement, inability of founder to let go, founder on board after departure
4. Heller (1989)	2 development corporations (USA)	Three phases of succession—pre-during-post—presents most important issues, and followers' views about predecessors/successors during each phase, followers underwent a "conversion process" and changed views of predecessor
5. Weed (1993)	1 nonprofit organization (USA)	Discusses succession after the conflict between founder and organization
6. Santora/Sarros (1995)	1 CBO (USA)	No succession plan by founder until potential life-threatening health situation, four-stage model based on observation/creates troika as succession plan
7. Santora/Clemens/Sarros (1997)	4 foundations	Four foundation directors discuss views on insiders/outsiders
8. Markham/Walters/Bonjean (2001)	12 voluntary association members-international	Successors follow oligarchy model-few want leadership roles, incumbents highly controlled selection process, turnover at the top slow
9. Gibelman/Gelman (2002)	14 large nonprofits (USA)	Departures of chief executives based on voluntary, misconduct, and political internal organizational and political internal organizational factors, impact on board, long-standing consequences /costs of departures on stakeholders

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10. Golensky (2005)	1 child day care (USA)	Description of succession process in a U.S. human service organization; boards approach executive succession through sub-committee; full board involved when finalists selected
11. Santora/Sarros (2007)	1 community-based organization (USA)	Founder/leader of CBO changed leadership succession plan over time, from identifying successor to no successor, leadership style reverted to original style
12. McKee/Driscoll (2008)	1 health care (Canada)	Discusses antecedents to departure of executives, succession process, time line for succession, organizational values in place
13. Neville/Murray (2008)	1 (Canada) (Teaching Case)	Outside executive director brings change to organization, executive director and board members depart, asks if successor \outsider/insiders, experienced/inexperienced
14. Santora/Sarros (2008)	1 USA	Abrupt departure of long-term executive director replaced by internal interim executive
15. Comini/Fischer (2009)	8 non-governmental organizations (Brazil)	Less than 40 percent have formal succession plans, almost all appointed insiders; founders remain close to organization after "departure" difficulty handing over reins, successor management style similar to predecessor, attempt to preserve organizational values with insiders
16. Santora/Sarros (2009)	1 community-based organization (USA)	Long-term founder departs, long-term friend assumes position, founder retains control, assumes another position within organization. Institutional concerns about follower loyalty
17. Balser/Carmin (2009)	1 nonprofit (USA)	Founder departs, organizational identity and change, and views of change by stakeholders as threat to identity of organization and core values
18. Santora/Sarros/Clemens/Esposito/Seaton (2010)	1 human service organization (USA)	No succession plan, abrupt departure of long-term executive director, board selects successor, uses interim successor model, deputy director selected as permanent successor



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Table 2: 17 Themes in Nonprofit Sector Succession Case Studies

Theme	Founder Issues	Insiders	Leadership Style	Follower Issues	Phases/ Stages	Succession Processes	Politics/ Influence	Change	No Succession Plan
<b># of Cases:</b>	<b>8</b>	<b>6</b>	<b>6</b>	<b>4</b>	<b>3</b>	<b>3</b>	<b>3</b>	<b>3</b>	<b>3</b>
	Gilmore/Brown (1985/86)	Zald (1965)	Santora/Sarros (1995)	Grusky (1959)	Gilmore/Brown (1985/86)	Zald (1965)	Zald (1965)	Smith/Moschel (1993)	Santora/Sarros (1995)
	Weed (1993)	Gilmore/Brown (1985/86)	Santora/Clemens/Sarros (1997)	Heller (1989)	Heller (1989)	Santora et al (1997)	Santora/Sarros (2001b)	Santora/Sarros (2009)	Santora <i>et al</i> (1997)
	Santora, Clemens/Sarros (1997)	Markham, Walter/Bonjean (2001)	Santora/Sarros (2007)	Balser/Carmin (2009)	Santora/Sarros (1995)	Golensky (2005)	Gibelman/Gelman (2002)	Santora <i>et al</i> (2010)	Santora <i>et al</i> (2010)
	Santora/Sarros (2001a)	Comini/Fischer (2009)	Santora/Sarros (2009)	Santora/Sarros (2009)					
	Santora/Sarros (2001b)	Santora/Sarros (2009)	Comini/Fischer (2009)						
	Comini/Fischer (2009)	Santora <i>et al</i> (2010)	Santora <i>et al.</i> (2010)						
	Santora/Sarros (2009)								
	Balser/Carmin (2009)								

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Table 2: (con't.) 17 Themes in Nonprofit Sector Succession Case Studies

<b>Theme:</b>	<b>Outsiders</b>	<b>Succession Plan in Place</b>	<b>Consequences</b>	<b>Succession Models</b>	<b>Values</b>	<b>Interim Directors</b>	<b>Disruption</b>	<b>Innovation</b>
<b># of Cases:</b>	<b>3</b>	<b>3</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>1</b>
	Santora, Clemens Sarros (1997)	Markham, Walter/ Bonjean (2001)	Santora/ Sarros (2001b)	Gibelman/ Gelman (2002)	McKee/ Driscoll (2008)	Smith/ Moschel (1973)	Gibelman/ Gelman (2002)	Zald (1965)
	Santora/ Sarros (2001a)	Santora/ Sarros (2001?)	Santora/ Sarros (2007)	Santora <i>et al</i> (2010)	Balser/ Carmin (2009)	Santora/ Sarros 2008	Santora <i>et al</i> (2010)	
	Neville/ Murray (2008)	Santora/ Sarros (2007)						

On the other hand, three cases (Markham, Walter & Bonjean, 2001; Santora & Sarros, 2001; Santora & Sarros, 2007) found that the leadership in these organizations had a succession plan in place. While we acknowledge that these sample sizes are indeed small (three respectively), they were the only cases that presented the issue of succession planning. Finally, the theme of innovation appears in only one US case (Zald, 1965). It is rather odd that innovation did not appear in the other US and international nonprofits given its importance for organizational survive and growth, and reasons for this omission warrant further examination.

## **RECOMMENDATIONS AND CONCLUSION**

Our paper illustrates the utility of the case study approach in research on executive succession in nonprofit organizations, and as a means of identifying key dimensions of the succession planning process. Exploration of succession planning using cases could provide superior and richer data for comparative purposes. Moreover, our paper makes a significant contribution to the field. It can serve as a resource to executive directors of nonprofit organizations as well as to other researchers interested in this area of inquiry.

Further, we suggest that researchers begin to expand their research into nonprofits organizations where fewer themes have been identified to date such as "Disruption" and "Innovation." These emerging themes may be an indication of more important trends in succession not yet fully explored. We suggest that the themes of interim directors, disruption and innovation will play more vital roles in the future when we consider the increasingly dynamic and competitive environments of nonprofit organizations internationally. Scholars who conduct nonprofit research in any setting should consider these succession issues as part of their research agenda. Moreover we suggest that researchers transcend the single case study in favor of multiple case analyses, and finally that cross cultural research be conducted to determine similarities and differences in succession practices between countries.

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## STRATEGIC HUMAN RESOURCE MANAGEMENT IN THE GERMAN-SPEAKING VIDEO GAMES INDUSTRY

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### **Abstract**

We perceived a paradox within the video games industry: While video games are cultural goods and companies are highly depending on their employees' abilities, the industry is notorious for disadvantageous working conditions and lacking people processes. At the same time, it's a highly dynamic and volatile business. Based on the resource-based view and the dynamic capabilities approach, we believe that the video game industry might serve as an example for other industries in progressing dynamization. We employ an explorative, qualitative methodology with semi-structured expert interviews. We substantiate that within this very volatile environment, dynamic capabilities do not necessarily establish a sustainable competitive advantage but are merely a prerequisite for competitive parity.

Key Words: Strategic Human Resource Management, Video Games, Resource-based View of the Firm, Dynamic Capability Approach

Topic Groups: Human resource management and career development, Business strategy

### **INTRODUCTION**

This paper examines strategic human resource management (SHRM) in the field of video game software, referring to games that are played on electronic platforms, either on PC or on one of the dedicated gaming consoles (at present notably Nintendo Wii, Sony Playstation 3 and Microsoft XBox360). The paper is organized around three research questions: Which practices and (implicit) conceptions on company strategy exist in German-speaking games companies? How do their human resource practices support these strategies, and what assumptions on fields of improvements can be derived from these findings? To accomplish this we will first describe determining conditions of this industry to create a common

understanding among readers. We will then review the theoretical framework: the resource-based view and dynamic capabilities. After describing the empirical study, we show the results and the organizational implications of our research and conclude with a discussion of limitations and possible future research directions.

Game development is conducted in project-structure and requires a very diverse range of qualifications and roles (Mencher, 2003; Autier & Picq, 2002; Irish, 2005). As cultural products, video games are created in a dichotomy of arts and business. A further characteristic is that two actors along the value chain hold central positions: Developers are in charge of creating the actual game, while publishers are responsible for financing development, production and marketing of the game and often retain the copyright for the game (Teipen, 2008). Temporary employment contracts and outsourcing to service providers are important tactics for developers to cope with fluctuating personnel demands (Teipen, 2008). Technological change is another determining factor within the video games industry. The platform lifecycle of video gaming consoles pushes the industry progressively by offering a leap in technological possibilities roughly every 6 years with each new generation (Cadin et al., 2006). Platform holders and software developers are strongly depending on each other: Platform holders put substantial research and development efforts into a new console, but its success depends on the supply of high-quality game software. The software developers on their part need time to built up know-how and make full use of a new platform (Johns, 2006).

Despite the high relevance of know-how and human resources, the video games industry is notorious for overtime and bad working conditions. Besides that, the lack of proper training especially for leading positions was criticized. The weak standardization of job descriptions complicates specialization and career planning. Internal promotions are common, but frequently flawed by lacking personnel development and poor preparation (Bonds et al., 2004). The lack of management training leads to bad decision-making processes and inconsistent business strategy that heavily favors building up productive staff over management staff (Teipen, 2008). Weakly structured work organization and ad hoc project management might be beneficial on first sight from a job variety perspective, but create insecurity and incomparability and cause a massive loss of senior personnel (Bonds et al. 2004). As many employees enter the industry to combine their hobby with their job, comparable sectors are frequently better paid, less stressful and more socially acceptable and lure away experienced staff (Cadin et al., 2006).

In the last years the industry managed to tap new target groups with the biggest growth among casual games and games for females. It is widely believed that there is a connection between team diversity and the produced games that is most manifest in the belief that building diverse teams is a key to widening the audience of games in general. While there is no solid empirical proof for that, there are examples from other industries where this logic rendered successful (Gourdin, 2005). So the narrow employee demographics are seen as a key challenge.

In summary, the industry has broadened and diversified its target groups, platforms differentiated and a number of technological novelties changed the way how games are produced and played. Consequently, decision makers face more strategic challenges and a larger array of options today than even five years ago. Supposedly, these conditions – a complex, highly volatile environment and the importance of highly skilled, motivated and interdisciplinary staff - call for two focus points of decision makers' attention:

- A strategy as basis for visionary, motivating goals



- Highly professional handling of all human resource affairs

## **THEORY**

Before presenting our empirical investigation we review the relevant literature on the chosen theoretical framework. Within the strategic and SHRM literature, the *resource-based view of the firm* (RBV) underlines that internal resources and especially people can be the basis of competitive advantage (Barney, 1995; Wright et al., 2001). Various characteristics of the video game industry suggest that both the RBV (Autier & Picq, 2005) and the *dynamic capability approach* are of special relevance to this industry: external environment offers little foothold for long-term orientation; internal capabilities, such as technological, design and marketing creativity, processes to smoothly organize game production and distribution or the ability to observe the market and pick up trends, establish the basis of companies' success. This highlights the importance of SHRM in the video games industry as SHRM focuses on the people of the organization as a strategic resource for achieving competitive advantage. In order to investigate SHRM questions the RBV is the most prevalent perspective (Colbert, 2004) as it builds a theoretical bridge between the fields of strategy and HRM (Wright et al., 2001). The concept of dynamic capabilities is a dynamic extension of the more static RBV, which focuses on resources or competences as a stable concept.

## **RESOURCE-BASED VIEW**

The central suggestion of the RBV is that a company can fundamentally be seen as a pool of resources and capabilities that establish the basis for its competitive success (Barney, 1995; Wright et al., 2001). In any market, companies need a multitude of resources and capabilities to compete. Some of them are common among all actors in this market; some of them are unique to a single company and establish a source of competitive advantage. This first type of resources and capabilities is needed to even 'play along' in a particular market, the second type is needed to 'win'. Such resources constitute a sustainable competitive advantage in case they are valuable, rare and hard to imitate (Barney, 2001) or, as Barney (1995: 50) earlier suggested *VRIO*: '...managers must address four important questions about their resources and capabilities: (1) the question of value, (2) the question of rareness, (3) the question of imitability, and (4) the question of organization': Barney and Wright (1998) conclude that sustainable competitive advantage comes from firm-specific more than from general skills; from teams more than from individuals and from HR systems more than from single HR practices.

This shows the importance of developing valuable, unique and scarce resources and capabilities in an organization, including its human resources that produce its unique character and create sustainable competitive advantage (Barney, 1991; Barney & Wright, 1998; Collis & Montgomery, 1995; Wright et al., 1994).

A company's resources and capabilities are path-dependent, as they are a result of its unique history, and thus in a constant process of change (Sydow, Schreyögg & Koch, 2009; Dierickx & Cool, 1989). There are no two companies with identical resources and capabilities, even if they cater to the same markets in a very similar way. Individual resources do not create value for the company - only bundles of resources and the way employees use individual competences to cooperate or utilize other resources create value. If capabilities are recurrently applied in a standardized way and involve coordinated actions of many individuals, they form organizational routines. Those rely on specific, tacit knowledge of the involved team members that is anchored deeper in their behavior each time the routine is applied (Grant, 2010). As complex organizational routines are not or hardly transferable,

hardly imitable and not tradable on factor markets, they can constitute a sustainable competitive advantage (Dierickx & Cool, 1989). On the other hand, there might be a substitutional relationship between efficient organizational routines and the flexibility to react to new requirements, so core competences can also be seen as a company's core rigidities: The routines that a company relies most on are hardest to change and impede the development of new capabilities (Leonard-Barton, 1992). The term structural inertia characterizes this disruptive ignorance that established companies often show when their core competences do not apply to a new situation any more (Hannan & Freeman, 1984). The path-dependence of competences can lead an organization into a lock-in (Sydow et al., 2009). These reasons urge for a more dynamic view which can be found in the dynamic capabilities approach.

### **DYNAMIC CAPABILITIES APPROACH**

In a rapidly changing environment, the very capability of a company to adjust to new requirements is a key competitive asset. Teece et al. describe this 'ability to integrate, build, and reconfigure internal and external competences' (1997: 516) in their dynamic capability approach<sup>1</sup>, which extends the RBV and focuses on how future valuable resources can be created and how the current stock of valuable resources can be refreshed in changing environments (Ambrosini & Bowman, 2009). Looking at economic praxis, there are obvious examples of companies that innovate successfully and skillfully move into new markets, but describing the dynamic capabilities needed for that is very challenging (Grant, 2010).

The dynamic capability approaches are criticized by Schreyögg and Kliesch-Eberl (2007): the dynamization includes the risk of dissolving the original idea of building organizational capability as they might lose the strategic power attributed to them in the RBV. They suggest solving the rigidity problem by establishing a separate 'capability monitoring' function instead of not integrating a dynamic dimension into the capability construct. This illustrates the importance of further investigation under which circumstances dynamic capabilities lead to competitive advantage and when they dissolve the strategic power of organizational capabilities. Helfat et al. (2007: 140) argue that 'dynamic capabilities do not necessarily lead to competitive advantage' and Wang and Ahmed (2007) stress that there are contradictory arguments in the literature. Additionally Eisenhardt and Martin (2000) underline that many firms may have similar dynamic capabilities. Ambrosini and Bowman (2009) conclude that dynamic capabilities can result in four different outcomes: First, they may lead to sustainable competitive advantage, second to a temporary advantage, third to competitive parity and finally, dynamic capabilities can lead to failure if the resultant resource stock is useless to the market.

### **METHOD**

We based our investigation on the theoretical frameworks presented above. As research on business management inside the video games industry is scarce, we selected an explorative approach. We deemed a qualitative approach (Eisenhardt & Graebner, 2007; Mayring, 2002; Yin, 1994) as most appropriate to gain insight into the practices, attitudes and integration of company strategy and human resource management inside the German-speaking video game industry: Nine semi-structured interviews with industry experts have been conducted between April and June 2009. They roughly took an hour and were based on an interview guideline unknown to the interviewee. We aimed for an informal interview style and

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<sup>1</sup> Eisenhardt and Martin (2000) as well as Nelson & Winter, 1982, Zollo & Winter, 2002 established two other dynamic capability approaches which differ slightly.

encouraged narrative on personal experience or opinion by using techniques of focusing and verbalizing (Mayring, 2002) to guide interviewees towards our research topics. A theory-based interview guideline supported the interviewer in leading interviewees back to the relevant questions during the interview. We selected managers on different levels with diverse backgrounds and roles within the value chain to reach a broad insight into the German-speaking video games industry, as a diverse sample offers firmer grounding of theory than a more homogeneous one (Harris & Sutton, 1986). Interviewees from German publishing companies, development companies and freelance management consultants are represented within the sample; project and company sizes are diverse. Each interview partner has experience with strategy processes. We held nine interviews with eleven partners presenting nine cases. We derived 12 categories from the interviews which we analyzed along the interviewee's degree of consensus.

## **FINDINGS**

The most interesting results we generated were the following:

1. Interviewee's statements showed very high congruence on basic attitudes: The role of core competences or premises of human resource work are seen very similarly. Those attitudes connect very well to the theoretical constructs of the resource-based view and the dynamic capability approach. However, the more interviewees described the consequences of these basic attitudes in daily work, the more diverse answers became.
2. Adjusting processes to a changing environment is commonly seen as an important capability, but it seems to be so common that we can only interpret it as a mere ability to play along (Grant, 2010), not as unique strength of any investigated firm.
3. We detected an interesting breach between interviewee's visionary wishes and their realistic expectations towards (S)HRM that especially encourages follow-up research.

Before we present our findings in detail for the categories with wide consensus between companies, we want to give a brief summary of all categories and the most important descriptive findings in Table 1. The empirical results show a shared understanding of basic principles of the business and people management. Respondents widely shared a common view on the *Importance of Dynamic Capability*, the *Resource-based View of the Firm* and the general *Importance of HR Practices*. A conscious people management could be verified in the majority of interviews. Most respondents don't expect their HR management to go through a major transition in the near future, as findings on *Expectations towards HRM* show. Responses on the concrete implementation of strategy processes and HR structure are much more diverse: Categories such as the *HR Role* or the perception of *Cruxes in Implementing Decisions* reveal that companies find manifold ways to manage their people resources based on these common principles.

### **Categories with wide consensus**

**Importance of Human Resource Practices:** All interviewees agreed on the importance of human resources to make these organizational routines work; thus employee assessment and support practices were seen as key activities. Loss of key personnel or failure to achieve recruiting goals were serious threats that concerned many respondents in their daily work. One interviewee describes this clearly:

*It's a people's business. The better the team, the better our projects and the safer our business. And if we select and develop our staff in an optimum way, we'll have a good team, and the quality will be alright. When we neglect HR work, we won't get good, qualified*

*employees, or won't find them in time, and we'll lose important employees because they're unhappy and we didn't notice. (Interview 3, p. 13)*

Table 1: Summary of Findings

Category	Summary of Findings
<b>Wide Consensus</b>	
Importance of Dynamic Capability	High consensus that constant adaption to volatile environments is a key capability.
Resource-based View	Nearly all respondents had a clear concept of their unique core competences and rather take an opportunistic attitude towards market positioning than towards their resource setup.
Importance of Human Resource Practices	Human resources are seen as essential to company's success, and the threat of losing good employees to sluggish people management is ubiquitous.
Expectations towards HRM	Most respondents expect their HR departments to grow in an evolutionary pace with the company without major role changes.
<b>Clear Tendency</b>	
Degree of Formalization and Regularity of the Strategy Process	Most companies had weakly to medium structured strategy processes: they either take place on a completely informal basis or some parts of the process are structured (e.g. the regularity of meetings), while others are rather random (e.g. follow-ups on decisions). Highly structured processes are the clear exception.
Influencing Information	Companies either base their strategic decisions predominantly on market-based information or consult a mix of market-based information and information from within the company.
HRM in Focus of Change Processes	HRM is clearly not companies' biggest concern regarding change processes. The biggest proportion of companies expects HRM to mainly deal with day-to-day problems rather than expecting them to be drivers of change.
<b>Contradictory results</b>	
Degree of Integration in Strategic Decision-making	While most companies do not involve HRM in long-term decisions, a smaller group clearly emphasizes the importance of HRM's involvement in company strategy. There is little room for indifference in between.
HRM Role	All types of roles could be verified in the interviews, although a clear assignment is often complicated by HRM structures that are (still) in a flux. The largest proportion of companies features <i>administrative experts</i> type HRM.
Holistic HRM System	The degree of linkage between HR practices to establish integrated HRM systems is very diverse over all companies. There is proof for completely isolated policies as well as for highly integrated systems.
Integration between Strategy and HR	Also the mechanisms of integration between company strategy and HR work are very diverse. Informal integration and HRM as subordinate department that executes superior decisions are predominant.
Cruxes in Implementing Decisions	The cruxes in strategy implementation are very diverse on the factual level as well as on the perception of severity. Environment volatility is a ubiquitous problem for all nearly respondents, but its severity is perceived differently.

Another interviewee identifies the installment of a dedicated HR manager as a milestone in companies' professionalization:

*How many developers really have a human resource manager? That's not that many. (...) There's a development process as a company from the hobby team to the factory; making that step from the fun squad who just likes creating games towards 'We're a company, an*

*organization', we want a stable development, we have a long-term strategy, as opposed to this 'We have a 3-years-strategy from game to game'. This change of mind is very important and it's closely connecting to realizing that you need a human resource manager. (Interview 6, p. 11)*

However, opinions on whether and how this important field of responsibility should be shared between HR professionals and line managers diverge: While a respondent from a medium-sized publisher surprisingly reported that there was no HR professional in his company besides a payroll clerk and that he preferred it that way, a developer assigned extensive responsibility to an HRM on executive level and another, smaller developer neglected having an HR person as HR matters are too important to delegate. So albeit the common stance that HR practices are key to long-term success, these three examples show the spectrum of views on the *HRM Role*.

**Resource-based View:** The vast majority of respondents described their companies' core competences as complex organizational routines, such as the ability to distribute and market games internationally, the ability to create new concepts or to cater to many game genres. A publisher describes managing independent service providers as a key routine for his company:

*One has to be good at managing outsourced providers, which can be a very tricky thing where a great many errors happen as (colleague) already mentioned. So you first have to learn that to get it right, but if you do it right, it's hugely powerful. (Interview 3, p. 8)*

Hard facts such as technology or brand value played a minor role. No respondent mentioned proprietary technology as key strength, which dissents the prejudice of tech-savvy developers. One interviewee described brand value as his company's most important strength:

*We have our USP, our team differentiation, through our brand. If it weren't for that, we'd have nothing – that's just it. (Interview 3, p. 7)*

**Importance of Dynamic Capability:** The volatile environment is a constant challenge to the actors of the video game business and interviewees confirm that the constant adaption of resources and capabilities is a basic necessity in this business. A publisher explains:

*Anyway, we will retain this culture of opportunity. It just belongs to the company. That means if we'd only do kids games and a first person shooter comes along that we find interesting on the distribution side, we would do it. It's as simple as that. (Interview 8, p. 6)*

No respondent described *dynamic capability* itself as primary core competence though – each company carved out areas of expertise and is very aware of the space in which they can and need to act flexibly. The cliché of the ultra-flexible game company that acts in loose networks and fluently adapts to each market fluctuation could not be located – in fact, respondents know their place very well and take small, conscious steps to explore new areas rather than neglecting stability. A developer stresses the importance of company size for flexibility:

*It may sound as if small equals flexible, but if you're too small, you're usually in such financial constraints that you are not really flexible but just driven anywhere... so we tried to outgrow that. So a certain size and flexibility inside. (Interview 6, p. 2)*

This attitude corresponds to Schreyögg and Kliesch-Eberl's critique on dynamic capability approaches: absolute flexibility contradicts efficiency and a company without organizational routines is only imaginable on a theoretical level. So dynamic capability plays an important role in the industry, but it's only one (common) piece in companies' competence mosaic. Instead of leading to sustainable competitive advantage dynamic capability in this industry seems to create competitive parity only – according to the four possible outcomes of dynamic capabilities described by Ambrosini & Bowman (2009).

**Expectations towards HRM:** Respondents widely agreed that their HRM should slowly evolve in the pace of overall company development – only a minority expects their HRM to undergo a basic role change in the near future. A publisher expresses the majority's opinion:

*I still need to find something that's less important than HR, that's the problem. So underlining the importance of HR is not the problem, but pushing back the importance of any other division in favor of HR – that's where I see the problem. (Interview 8, p. 13)*

This expectation contradicts other hopes that respondents expressed: The idea of HRM as a facilitator of leadership and good management practices was expressed in many interviews – an ideal HRM would not only take care of systematical employee appraisals, enable employees to give feedback and safely criticize their superiors, and make sure that employees generally feel cared for and appreciated. Many interviewees wish that HRM takes wide leadership responsibility or acts almost like a union in facilitating communication and representing employees' interests towards management.

## **MAIN FINDINGS**

***Which practices and (implicit) conceptions on company strategy exist in German-speaking games companies?*** Interviewees commonly share a basic understanding on what establishes their success: Complex organizational routines, such as the ability to distribute and market games internationally, to create new concepts or to cater to many game genres, were mentioned as core competences. Interviewees see their employees as the basis of these routines and know that their capability to adjust these routines to a volatile environment is one important competence among others. Technology was not mentioned as a core competence – as technology can hardly be protected from imitation, interviewees are well advised not to base their success purely on superior technology. Instead, they value their employees very high and identify people's performance and motivation as crucial factors. Thus, the resource-based view and the dynamic capability approach are very applicable to the German-speaking video games industry and their principles are widely diffused among its actors, although not all may be familiar with the academic terminology. Dynamic capabilities are not unique and do not establish a sustainable competitive advantage for any investigated company, which underlines the findings of prior dynamic capabilities authors (Ambrosini & Bowman, 2009; Eisenhardt & Martin, 2000; Helfat et al., 2007; Rindova & Kotha, 2001): Dynamic capability is necessary in this industry, but only creates competitive parity.

Looking at the concrete implementation of strategy work, highly structured processes are clearly rare exceptions. Most companies work with processes that are medium formalized and regular at utmost – a carefully tailored toolset for analysis and decision-making would foster the effectivity of strategy work if it avoids destroying the creative potential that might lie in less structured processes. The focus of information research for strategic decisions is on market-based information, so slightly shifting attention to resources might result in a more balanced view.

*How do their HR practices support these strategies?* The more the focus shifted from basic attitudes towards concrete implementations, the more ambiguous results became. Although interviewees expressed a very common understanding on the basis of their success, individual company strategies lead to very diverse HR practices. Respondents can roughly be arranged into two groups: One group locates their HRM high up in the company's hierarchy and integrates HRM and strategy work closely. The other group sees HRM as subordinate function that implements strategies rather than contributing to design them. Thus, HR roles and the integration of HR practices are very varied, but throughout the sample direct contact with employees is valued much higher than process-orientation.

There are also some common motifs: Firstly, HRM has been introduced as a reaction to special recruitment demands in most companies. This results in an imbalance in HR practices: while recruiting processes run very smoothly, other processes, such as appraisal and development, lag behind. Secondly, managers consciously watch employee motivation and know that retention is best achieved in environments that give employees meaning and ownership over their work. A third prevalent topic was the lack of standardized education paths and further training opportunities.

Summarizing, respondents start from very similarly perceived premises: The importance of dynamic capability, resource-based view and the importance of HR practices are highly esteemed by the vast majority of respondents. The consequences down the road are very different though. Compared with Barney's VRIO model, this can be interpreted as follows: Respondents widely agree on the factors of value, rarity and imitability: They see employees, their qualifications and motivations as well as different complex organizational routines as the basis for their success. Despite the many cruxes in implementing decisions they face, interviewees agree on the importance of strategy work. When it comes to how they organize their capabilities and how they secure their sustainability, they develop very different solutions: How deeply and in which way HRM is involved in strategic decisions, which role it assumes and how far it links single measures to holistic systems is very different throughout the sample. The degree of formalization and regularity of strategy processes is generally low or medium, so HR professionals likely face additional hardship in getting into the loop in these matters. Also the emphasis on market-based information raises the barrier for HRM professionals to get involved.

## **IMPLICATIONS & DISCUSSION**

Generally, the impression emerges that HRM departments inside the German-speaking video games industry still have room to grow up to their full potential. Interviews showed that managers would appreciate more active HR departments that act as facilitators of leadership. At the same time, they do not assume to get advice on organizational development topics from their HR departments, do not expect HRM to initiate change projects and do not require HRM to change their role substantially in the foreseeable future. This obvious paradox would be an interesting starting point for further research. For the time being, we see that more powerful, holistic HRM systems require appropriate responsibility, resources and qualifications to fully exhaust their potential. In an industry that is so dependent on its employees and their capabilities, this would very likely be a fruitful investment. Success factor research delivers valuable insights on where to start and what to consider. We derive three suggestions for managers and HRM professionals from our research:

1. Exploring the potential of more formalized strategy processes with attention not to spoil the creative potential of their strategy work could be a worthwhile effort.
2. Solid systems to assess and track developments in organizational capabilities in general and employee's individual competences in particular would foster the understanding of own competences and allow for more structured employee feedback systems.
3. Finally, successful organizational change is more likely when introduced in incremental steps rather than in revolutionary leaps, especially in an industry that lives with a lot of insecurity anyway. Destroying psychological contracts by abruptly changing career paths, evaluation systems and training structures can develop disruptive forces inside a social system, so an attentive and systemic approach may be a key to success.

This study is of theoretical significance as it contributes to closing the often argued gap between theory and practice (e.g. Ambrosini & Bowman, 2009; Pablo et al., 2007) in investigating firms which have to reach sustained competitive advantage in dynamic environments. It indicates that in the volatile environment of the video games industry dynamic capabilities might not be sufficient to reach sustainable competitive advantage.

We want to close with a critical reflection on the limits of this work: The significance of the empirical part of this paper would increase with a larger amount of collected data. This refers to the number of interviewees as well as the length of the interviews and the selection of interview partners. Investigation in a larger array of companies could reveal patterns that clusters of companies have in common, such as similar attitudes or practices amongst publishers or developers or patterns that correlate with company size, age or structure. The small sample size encourages speculation on such patterns, but doesn't provide enough data for sound conclusions. Interviews with other partners from the investigated companies could uncover differences in perception and help to distinguish personal opinions and corporate rhetoric from shared observations. Such a multifaceted approach could examine concrete decision processes and the cruxes managers face during strategy work, provide a sound analysis of the paths that strategic decisions take from intention to realization including unrealized and emergent decisions (Mintzberg, 1987). Also, assessing their implications on companies' creative processes would clarify when formalized strategic management fosters efficient decisions and when it damages companies' creativity and flexibility.

Comparing attitudes and (S)HRM practices in the German-speaking countries to those of the spearheading video game production territories and to similarly creative, project-based and knowledge-based industries would enable cross-country and cross-industry learning effects. Due to its steep growth and certain cultural traits, the German-speaking video games industry may lag behind other industries or territories regarding its professionalization, but may serve as a model case for industries that face an erosion of stability. Further research in this area would therefore not only give video game companies useful orientation but cross-fertilize other industries with insights into management in volatile environments.

## **CONCLUSIONS**

The importance of dynamic capability, resource-based view and the importance of HR practices are highly esteemed by the vast majority of respondents. The present study has demonstrated that within the very volatile environment of the video-games industry, not technology, but complex organizational routines are seen as core competences and that dynamic capabilities do not necessarily establish a sustainable competitive advantage but are merely a pre-requisite for competitive parity. Concluding, we want to comment on Collis'



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question 'Where does this leave organizational capabilities? And how valuable are they as sources of sustainable competitive advantage?' (1994: 150): For our field of research, the presence of dynamic organizational capabilities might endow companies competitive parity and allow them to remain in the market, but they are not the philosopher's stone for sustainable competitive advantage in this volatile – some would say crazy - environment.

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## THE ROLE OF PERFORMANCE MEASUREMENT SYSTEMS IN FOSTERING TRUST WITHIN FAMILY BUSINESSES

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### **Abstract**

Trust is a critical source of competitive advantage for family firms (FBs) and yet the initial trust embedded in the family firm is often replaced by conflict and strife; consequently, investigating how this resource can be sustained and fostered is significant. The aim of the paper is to identify which mechanisms can be useful in maintaining and growing the initial level of trust: clear and transparent processes can clarify responsibilities and expectations of family members and employees and engender system trust. Transparency of rules and operational mechanisms can be therefore translated into practice through corporate governance systems: specifically, effective governance will be based on performance measurement systems, taking into consideration clear guidelines on key issue governing family and non-family members, reducing conflicts among shareholders. Thus, FBs can exploit the competitive advantage of strong trustworthiness if they can leverage the interpersonal trust; this sustained level of trust may indeed be a key ingredient for emotional capital that is central to the continued success of family firms (Sharma, 2004).

Keywords: trust, family business, corporate governance, performance measurement systems

Topic Groups: entrepreneurship, business strategy

### **INTRODUCTION**

Trust is a critical source of competitive advantage for family firms and yet the initial trust embedded in the family firm is often replaced by conflict and strife; consequently, investigating how this resource can be sustained and fostered is significant.

The concept of trust is crucial in considering competitiveness, because it constitutes the basis of social capital: the latter is defined as a unique, not imitable, deeply embedded resource, extremely difficult for competitors to imitate (Dess and Shaw, 2001).

From this point of view, sustaining and fostering trust in FBs can be a way to preserve competitive advantage.

As shown by many scholars such as Sundaramurthy (2008) and Steier (2001), the initial trust inherent in the early stages is not sustained as the company grows and evolves.

Thus, the mechanisms useful in maintaining and growing the initial level of trust that enable family business to flourish should be investigated.

The aim of our work is to identify which mechanisms can be useful in maintaining and growing the initial level of trust: clear and transparent processes can clarify responsibilities and expectations of family members and employees and engender system trust.

In order to investigate operational mechanisms, we have to start by the consideration that they derive from corporate governance decisions: the aim of the governance system is to guarantee a balance between property and control, prescribing rules and codes of conduct, which define the way to divide the power and responsibility of management and decision making process.

The expectations of family-managers and family members not involved into the business may vary and the clarification of these aspects is central in mitigating conflicts and sustaining trust.

In this paper we assume that, in order to consider the need of preserving shareholders' expectation (managers and non-managers), attention should go beyond formal governance rules (compliance) (Busco, Giovannoni and Riccaboni, 2007), taking into consideration mechanisms to monitor organizational performance.

We discuss the importance of *effective governance*: the latter can be defined as a balanced combination of structures, plans, policies, rules and decision making power that enables ownership group to play a constructive role in the FB system.

While we focus our attention on this mechanisms, such as performance measurement systems, we will not analyze governance choices, such as board of directors composition, shareholders' meetings, etc.

Effective governance will be based on performance measurement systems, taking into consideration clear guidelines on key issue governing family and non-family members, reducing conflicts among shareholders.

Thanks to performance measurement systems, FBs can exploit the competitive advantage of strong trustworthiness; this sustained level of trust may indeed be a crucial basis for social capital, central in preserving FBs' competitiveness.

## **THEORETICAL FRAMEWORK**

### **Exploring the concept of familiness**

In most countries FBs account for major share of business, employ a significant portion of total employees and record significant amount of investments, accumulated capital and added value: different studies underline the importance of FBs across different countries, such as Western Europe (Maury, 2005), Spain (Gallo and Estapé, 1992, 1994), Germany (Riedel, 1994), United States (Astrachan and Kolenko, 1994), Australia (Owens, 1994) and Chile (Martinez, 1994).

In spite of the significant role played by FB in the global economy, researchers still don't converge on a unique definition of FB, but propose different definitions depending on the framework used to investigate FBs, such as strategic management, organizational theory, economics, sociology, anthropology, etc.

The matter of definition is crucial, especially with reference to researches on FBs: Westhead and Cowling (1998) consider how definitions of FBs affect comparative studies of family

versus NFBs; when they split a sample into FBs and NFBs on the basis of seven different definitions, they obtain very different results.

The importance of this construct has been highlighted by Pearson, Carr and Shaw (2008) who state that identification of a unique definition of familiness is both groundbreaking and important for family business research.

The component of family involvement is a necessary but not sufficient condition for defining FB: in fact, only if family involvement is directed toward behaviours that produce certain distinctiveness, it can be considered FB.

According to the governance perspective (Corbetta, 2005, Montemerlo, 2000, Corbetta, 1995), especially with reference to the kinship degree, we can classify FB differently in presence of (1) *a controlling owner* – usually the founder, (2) *a sibling partnership* between brothers and sisters, or (3) *a cousin consortium* (see also Ward and Dolan, 1998).

Another classification is based on the number of shareholders or families involved and considers, for example (a) *close firms* – with one family at the first or second generation or more than one family at the first generation and (b) *wide firms* – usually one family after the third generation, with a great number of members.

Many traditional definitions of family business are focused on the combination of some components of family's involvement in the business, such as ownership, management and trans-generational succession (Chua et alii, 1999, Chrisman et alii, 2005); these authors argue that a positive contribution by the family leads to distinctive familiness which can serve as a source of competitive advantage for the family firm.

Villalonga and Amit (2006) outline that most definitions include at least three dimensions: one or several families hold a significant part of the capital; family members retain significant control over the company, which depends on the distribution of capital and voting rights among non family shareholders, and family members hold top management positions.

The influence of family is also related to the level of family control; in this sense, Anderson and Reeb (2003) make a distinction between active and passive family control.

The crucial point in finding out a definition for FBs is that it should be able to explain why family involvement in a business leads to behaviours and performances that might be different from the ones of NFBs (Lee, 2006, Moscatello, 1990).

All this conducts to investigate FBs behaviour to catch the essence of family business and thus understand how they perform.

FB seems to be a complex aggregate of systemic factors that impact on strategy processes and firm performance; Habbershon and Williams (1999) state that these unique family influences can be described through the resources and capabilities peculiar of the firms.

In particular, Habbershon et alii (2003) identifies the main elements that interact in a family business system as:

- the controlling family unit – representing the historical background, traditions and life cycle of the family;
- the business entity – representing the strategies and structures utilized to generate wealth;

- the individual members – representing the interests, skills and life stage of the participating family's owner/managers.

The pool of resources and capabilities generated, *familiness*, it's hard to duplicate because it represents unique, inseparable, synergistic resources and capabilities arising from family involvement and interaction. Hoffman, Hoelscher and Sorenson (2006) introduce the concept of family capital: it is an asset that derives from the family ties existing in family firms.

Resource Based View (RBV) has the potential to help identify the resources and capabilities that make family firms unique and, through their interaction, allow them to develop family-based competitive advantage.

This approach has been successfully used to explain long run differences in firm's performance that can't be attribute to economic conditions or industry, as Porter (1980) stated in his environmental models.

In particular, he assured that:

- firms in an industry are identical in terms of strategically relevant resources they control and strategies they adopt;
- resource heterogeneity developed in an industry is short-lived because resources are highly mobile.

The RBV framework, instead, states that firms in an industry are heterogeneous and considers the intangible bundle of various resources as the cause of competitive advantage and underlines that firm's resources are not perfectly mobile across firms (Barney, 1991).

So a firm can sustain its competitive advantage depending on the inimitable nature of its resources, including, for example, both physical and intangible assets, individual and corporate skills, organizational processes and firm attributes.

FBs have unique characteristics that play an important role in their performance: through RBV it's possible to delineate the competitive capabilities of family companies (Habbershon, Williams, 1999).

Literature on RBV (Barney, 1991; Grant, 1991) usually identifies four main categories for resources:

- *physical capital resources;*
- *human capital resources;*
- *organizational capital resources;*
- *process capital resources.*

In each of these four categories family business literature has included many family business characteristics that constitute the potential of FBs (Habbershon, Williams, 1999).

At this point it's crucial to recognize under which conditions these elements can provide competitive advantage: the interaction between the family, its individual members and the business creates that bundle of resources peculiar of each firm that constitutes "*familiness*".

The RBV can bring two bodies of literature – strategic management and family firm theories – together into one comprehensive framework to investigate FBs' performance.

Some researchers (Habbershon, 2003; Chua et alii, 1999), in order to investigate FBs, start from the evidence that this kind of companies exists because of the reciprocal economic and non economic value created through the combination of family and business system; in particular the sustainability of a family business is a function of both business success and family functionality (Olson et alii, 2003).

As shown by SFB Model (Sustainable Family Business Model), family business are complicated by dynamic relationships within the owing family: the sustainability of a family business is a function of both business success and family functionality (Stafford et alii, 1999).

### **Family and business interaction: social capital as source of competitiveness**

Family businesses are characterized by the interaction of two complex systems, the family and the business, that are dominated by different rules and values, with mutual influences (Corbetta and Salvato, 2004; Chrisman, Sharma and Taggar, 2007).

Family is often labelled as the emotional arena and business is labelled as the ration arena; principles such as equality, members' protection and support, saving, traditions, sentimental feelings, shared values, dominate family, while business should be managed according to economic and financial standards, rational decision making processes and flexibility.

The potential for conflict is high in family firm because several systems overlap as the family business grows (Tagiuri and Davis, 1996): family tasks and values are often placed in opposition to those of the business.

The relationship between family and business differs as the life stage of the business evolves (Ward, 1997): strategic changes represents the most critical phases because they require decisions about leadership, involvement into the business of different members of the family, their compensation, roles' attribution, etc.

Family usually tend to uniform members' treatment in order to avoid conflicts, evoking equality values: in a family firm context, this lack of meritocracy can cause managerial problems on the business side (Tillet, 2001).

Family tension is not helpful in achieving success for either the family or the business: productivity declines in presence of family tension.

Ward (2004) notes that successful family business recognize that predictable conflicts are likely to arise and suggests dealing with them even before they become real.

Compensation, entry into the business and succession are all such decisions that should be given attention before they become personal and emotional. In this sense, particular attention should be paid to social capital, which involves the relationship between individuals or organizations and is considered a specific source of competitive advantage for family firms.

Leana and Van Buren (1999) define social capital from an organizational perspective, as the character of social relationships within the organization realized through members' levels of collective goal orientation and shared trust.

Social capital is by definition socially complex, related to norms, values, purpose and trust that exist in the family firm; it is considered a deeply embedded resource, tacit in nature and extremely difficult for competitors to imitate (Dess and Shaw, 2001).

According to Nahapiet and Ghosal (1998), social capital is defined as “the sum of the actual and potential resources embedded within, available through and derived from the network of relationships possessed by an individual or social unit” and is conceptualized as consisting of three dimensions – structural, cognitive and relational.

The latter dimension provides necessary elements to link firm resources and capabilities: trust is an essential component of effective collaboration within the firm.

The type of trust that exists in the firm has implications for the linkage between trust, organizational processes and capabilities.

### **Trust as organizing principle: the basis of social capital**

Trust is a concept which has been widely explored in the management and organization literatures (Gambetta, 1988; Tyler and Kramer, 1996; Nooteboom, 2002).

At a general level trust can be defined as the willingness to accept vulnerability based on positive expectations about another’s intentions or behaviors (Mayer et alii, 1995, Rousseau et alii, 1998); the concept of trust implies a preference for a stable and predictable environment.

For our purpose, we will assume the viewpoint of some scholars (Mc Evily, Perrone, Zaheer, 2003) that conceptualize trust as an organizing principle, investigating how it affects organizations. They define trust as *expectation* or *intention* because they are most interested in explaining the behavioral manifestations of trust that shape and influence organizing.

It’s important to consider the two main forms of trust: a confidence in the reliability of (a) specific individuals (*personal trust*) and (b) abstract systems (*system trust*). Importantly, these two forms of trust are often interdependent, as individuals are usually the access points for the systems and through face-to-face contacts such individuals can absorb risks by assuring potential users that the systems are trustworthy (Bachmann, 2001).

In an organizational context, expectations about another’s intentions or behaviors include competent role performance from those involved within a social relationship system.

In addition to competence, trust is also based on behavioral integrity and benevolence of others; consequently, the view of trust includes of course an element of calculated expectation but also a non-calculative component, depending on bounded rationality.

Trustworthiness plays a crucial role in making trust effective: trustworthiness implies being worthy of having trust placed in one (Barney and Hansen, 1994); without trustworthiness, trust is not sustainable and the alignment between the two factors determines the effectiveness of trust as an organizing principle.

According to Mc Evily, Perrone and Zaheer, trust influences organizing through two main causal pathways: structuring and mobilizing. From structuring perspective, trust influences the stable and enduring interaction patterns within organizations (for example, by influencing the status and reputation of certain actors, trust affects their position within organizations); from mobilizing perspective, trust motivates actors to combine and coordinate resources toward the achievement of organizational goals.

Trust has been characterized by two dimensions: *fragile and resilient trust* (Leana and Van Buren, 1999). Fragile trust is given in exchange for the possibility of fairly immediate



rewards. Fragile trust, that is more dependent on formal rules of allocation, doesn't provide a strong link to the organizational capabilities of information flow and collective action. On the opposite, resilient trust is based on frequent social interaction with parties and involves their moral integrity.

Trust is central to family business, in which a group of individuals affiliated with enterprise are connected through ancestry or familial ties, because their existence goes well beyond economical rationality. Even if family firms are fertile grounds for resilient trust, often it is replaced by an atmosphere of fragile trust (Steier, 2001).

In fact trust, a competitive advantage for family business in early stage, often deteriorates as the firm grows. Thus it's significant to investigate the mechanisms useful in maintaining and growing the initial level of trust that enable family business to flourish.

Furthermore, it's also central understanding how various structures and processes can through additional trust bases complement and sustain the initial relationship-based trust within family firms.

The model proposed by Sundaramurthy (2008), the *cycle of trust* within family firms, offers a contribution to understand how additional governance structures and processes can complement initial familial trust; specifically, the interweaving of competence trust and system trust into a sustaining cycle allows to understand how the different forms of trust need to co-exist to benefit the firm, also according to the firm's life stage.

The model is based on many premises; the main ones are summarized as follow:

- trust is a multidimensional phenomenon with cognitive and affective aspects;
- trust is dynamic, considering internal or external relationships (between family business and external business transactions) and the different phase of firm's development;
- the trust cycle is regenerative and the family firm will continue to revisit each of these three aspects of trust after the initial cycle.

Family businesses in the early stages are characterized by an high level of trust that is *relational* and *interpersonal* (Corbetta and Salvato, 2004). *Interpersonal trust*, among members of the family, is based on kinship, familiarity, history and extended period of experience.

This kind of trust takes a huge amount of time to build between strangers; in this sense family firms are unique because they begin with deep level of trust: the family constitutes the common identifying factor.

Over time, as a family business grows, complexity on a number of dimensions is introduced; ownership and management of the family business may disperse among cousins and affiliates. Lack of deep knowledge of each other and common experiences can dilute the level of interpersonal trust: a need for additional cognitive trust bases arises.

*Competence trust* represents the belief that parties entrusted with a job are not willing but capable of performing the job effectively.

In a family context, those members who are not actively involved in the business seek to have confidence that those running the business system are capable of adapting to changing

environmental needs. Such confidence can be fostered when the family business system is open to outside influences, including the presence of non – family members on the board and encouraging family members employed in the business to gain work experiences outside the family firm (Gersick, Davis, McCollom Hampoton, and Landsberg, 1997).

A third dimension, crucial into the cycle of trust in a family business, is *system trust*: this type of trust is impersonal and related to the trust individuals place in the system and processes.

As the family business grows, interpersonal trust can not be sustained without confidence in the system that governs key interpersonal exchanges: clear and transparent rules can clarify roles, responsibilities and expectations of actors within family firm enhancing the potential for trust in the working of the family business system.

This sustained level of trust may indeed be a key ingredient for emotional capital that is central to the continued success of family firms (Sharma, 2004).

### **Sustaining trust: effective corporate governance and performance measurement systems**

The governance of a FB is more complicated than for NFB because of the central role of the family that owns and leads the business: in a FB, the business, the family and the ownership group all need governance.

Clear policies allow the integration of family values within clear boundaries and help establish trust in the family business system. In this sense, control systems are crucial to maintain and foster trust: starting from corporate governance's decisions, the identification of operational mechanisms is required to translate the expectation of family shareholders without a managerial role into achievable objectives.

The first step in approaching corporate governance' decisions regards the definition of the following elements (e.g. Catturi, 2005; Comoli, 2002):

- a. roles (which family members will be involved into management, their responsibilities, their position, etc) and
- b. shareholders' expectations, referred to long and short term firm's goals, both measurable with financial and non financial performance indicators.

According to the prevalence of family or business within the family business system, it's possible to classify family firms into *business* or *family oriented* ones (Miglietta, 2009): this classification is significant with reference to the governance assets of family firms; consequently, when family prevails over business, all strategic organizational roles are covered by family members, while, when the focus is on business, family members can be involved or not into management, even if they are shareholders.

Often, within family firms, we can observe the separation between ownership and control, owing to the fact that several members of the family may not be involved with the daily operations as they may choose different careers.

Moreover, as successful FBs open themselves to external members, an additional stakeholder – the non-family employee – is involved in the management.

Consequently, the first group of decisions to be taken is about the attribution of decisional power to those family members involved into the management (*a-roles*): generally, they will be members of the board of directors, with different competences.

In order to benefit from the interaction of family and business, it's crucial to identify proper governance mechanisms to guarantee a balance between property and control.

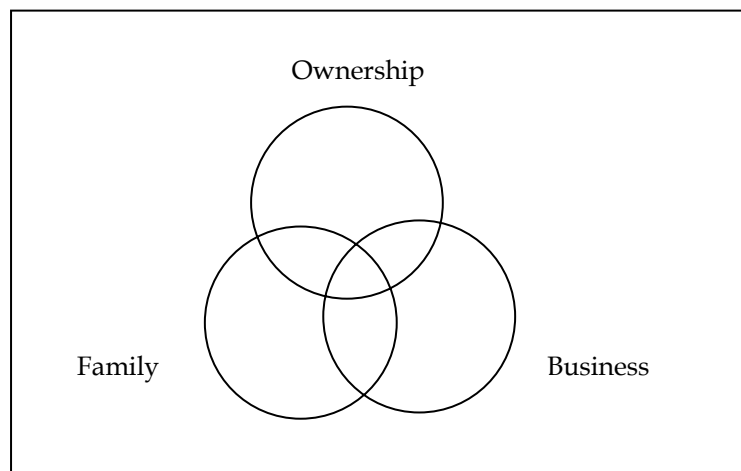
The expectations of family-manager and family members not involved into the business may vary and the clarification of these aspects is central in mitigating conflicts and sustaining trust.

The formalization regards main firms' goals setting (in the long and short term), financial and non-financial: this formalization is crucial because it derives from the strategic vision of the business and implies the commitment of family managers in achieving that objectives (*b-shareholders' expectations*); family members with no managerial responsibilities could have some difficulties in controlling business's results.

Corporate governance prescribes rules and codes of conduct, which define the way to divide the power and responsibility of management and decision making process; in other words, it represents the system, which regulates business executives to run business in a way to meet the interests of different shareholders as well as all stakeholders, such as creditors, workers, and consumers (Berle and Means, 1932); in a narrow sense, it means internal control system to control business management through proper mechanisms such as internal corporate body, such as general shareholders' meeting, board of directors and auditors.

According to Davis (2007), effective governance allows to manage issues within and across three overlapping groups: the family, the business and the ownership group.

Figure 1: The "3-circle" model of FB



Source: Davis, 2007

The overlap among the three groups leads to different points of view among individuals depending their location in the three circles; different viewpoints must be reconciled in a respectful way to set direction for the company: effective governance should be helpful in

- creating a suitable identity for the owners;
- setting a sensible and motivating direction for the owners, business and family;
- maintaining discipline among the owners to help the business achieve and pursue important goals.

Effective governance can reduce tensions in FBs by clarifying family-business-ownership needs and managing the conversations needed to agree on goal, values and policies. Usually, all these issues are translated into governance structures, such as shareholders meetings, family council, board of directors.

Considering the need of preserving shareholders' expectation (managers and non-managers), the attention should go beyond formal governance rules (*compliance*) (Busco, Giovannoni and Riccaboni, 2007), taking into consideration mechanisms to monitor organizational performance. In this way it's possible to focus attention on effective governance: the latter can be defined as a balanced combination of structures, plans, policies, rules and decision making power that enables ownership group to play a constructive role in the FB system.

Performance is itself an ambiguous term, with no simple definition, depending on the main strategic goals identified by shareholders; the term doesn't specify to whom the organization is delivering its performance: at an organizational level we will assume that an organization that is performing well is one that is successfully attaining its objectives, implementing an appropriate strategy.

If we consider governance, a crucial ingredient in making it effective is the performance measurement system (Coda, 2002). The designing of such systems, in fact, requires the formalization of shareholders' expectations through the firm's goal setting (both for the long and the short term), financial and non-financial: the formalization of objectives and the commitment of family managers in achieving them can increase the level of trust by family members non involved into management, because their have explicit mechanism to control business's results.

Any controlled system requires objectives and goals against which its performance can be assessed; specifically, according to Otley (1999), the main issues that need to be addressed in developing a framework for managing organizational performance can be the follow:

- 1) what are the key objectives central to the organization's overall future success?
- 2) what strategies and plans has the organization adopted and what are the processes that it has decided will be required for it to a successful implementation? How does it measure the performance of these activities?
- 3) how does the organization set appropriate performance targets for each measure?
- 4) what reward managers gain by achieving the performance targets (or, on the opposite, what penalties will they suffer by failing to achieving them?)
- 5) what are the information flows (feedback and feed-forward mechanism) that are necessary to enable the organization to learn from its experience and to adapt its behaviour?

As outlined before, these questions are very closely related to shareholders' expectations and involve management practises. Particularly, the first is concerned with the definition of goals and measurement of goal attainment, not just financially but also in term of meeting all shareholders' expectations.

The implementation of performance measurement systems should lead to effective governance, moving from *compliance* to *accountability*. While the respect of corporate governance standards and guidelines (*compliance*) is important because imposed by law, the commitment of managers (*accountability*) is crucial to achieve corporate objectives.

We must notice that compliance itself doesn't guarantee effective governance: the respect of formal rules must be accompanied by performance measurement system, able to control goal attainment and preserve shareholders' expectations.

Busco, Giovannoni and Riccaboni (2007) outline the importance of *integrated governance*: the system is based not only on compliance, but also on performance and knowledge.

The constant application of performance measurement systems, transparency, clear guidelines on key issues governing family and non – family members provides the foundation for trust, that, at this point, we can define *system trust*.

As previously underlined, as the family business grows, interpersonal trust can not be sustained without confidence in the system that governs key interpersonal exchanges. Performance measurement systems create an additional cognitive base for trust: starting from the initial *interpersonal trust* (based on kinship, familiarity, history, etc), it's possible to generate *competence trust*, that represents the belief that parties entrusted with a job are not willing but capable of performing the job effectively.

In a family context, those members who are not actively involved in the business seek to have confidence that those running the business system are capable of adapting to changing environmental needs. Such confidence can be fostered when the family business system is open to outside influences, including the presence of non – family members on the board and encouraging family members employed in the business to gain work experiences outside the family firm.

## **DISCUSSION**

Supported by researches on familiness and trust, in this paper we offer an integrated view on how supporting the initial level of FBs' trust (competitive advantage for FBs) through operational mechanisms.

When a FB grows, trust embedded in the family firm in the early stage of life is often replaced by conflict and strife.

Furthermore, in a family context, those members who are not actively involved in management need to entrust those running the business: they have to be capable of adapting to changing environmental needs and preserving all shareholders' expectations.

The expectations of family-manager and family members not involved into the business may vary and the clarification of these aspects is central in mitigating conflicts and sustaining trust.

The concept of trust is referred to the belief that parties entrusted with a job are not willing but capable of performing the job effectively.

In our work we assume that, in order to consider the need of preserving shareholders' expectation (managers and non-managers), attention should go beyond formal governance rules (*compliance*), taking into consideration *effective governance*.

The importance of *effective governance* is mainly connected to the need of reducing conflicts among shareholders.

Performance measurement systems make governance effective because they represent mechanisms to monitor organizational performance, taking into consideration clear guidelines on key issues governing family and non-family members.

The designing of performance measurement systems, in fact, requires the formalization of shareholders' expectations through the firm's goal setting (both for the long and the short term), financial and non-financial: the formalization of objectives and the commitment of family managers in achieving them can increase the level of trust by family members non involved into management, because their have explicit mechanism to control business's results.

The constant application of performance measurement system, transparency, clear guidelines on key issues governing family and non – family members provides the foundation for system trust: from the initial interpersonal trust, based on kinship, familiarity, history, etc, it's possible to move to competence trust, based on more cognitive basis. Competence trust is the type of trust needed when FBs grow and evolve.

Thanks to performance measurement systems, FBs can exploit the competitive advantage of strong trustworthiness not only in the early life stage; this sustained level of trust may indeed be a crucial basis for social capital, central in preserving FBs' competitiveness.

From this point of view, sustaining and fostering trust in FBs can be a way to preserve competitive advantage.

The purpose of this study was to bring performance measurement perspective and associated research on trust into the literature on family business.

#### **LIMITATION AND FURTHER RESEARCHES**

We need to address some limitations of our work that also offer future research opportunities.

While we focus our attention on mechanisms, such as performance measurement systems, we didn't investigate governance structures, such as board of directors composition, shareholders' meetings, etc.

Accordingly, future researches should investigate corporate governance structures and the implementations of performance measurement systems through empirical analysis.

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## USING ENTREPRENEURSHIP OPPORTUNITY IN OPTIMIZING ORGANIZATIONAL EXCELLENCE A CASE STUDY

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### Abstract

This paper investigates how industrial organization discovers and acts entrepreneurship opportunity and uses it to realize organizational excellence.

The paper is considered as a partial responds to the great need for the application entrepreneurship approach and areas, it's main practical contribution is to underline the relationship between selective areas of entrepreneurship and organizational excellence using a questionnaire to gather the data needed and test the formulated hypothesis. The paper concludes with significant correlation and effect found between the two variables. Some recommendations draws attention to some issues needed to be considered. Other recommendations gave assistance to the management of company under study to understand the relationship and invest it in its business, thus the paper is divided into six sections.

Key Words: Quality, entrepreneurship, organizational excellence, Malcolm Baldrige Quality Award

Topic Groups: Entrepreneurship, Industry, Production & Operations Management

### INTRODUCTION

In recent years several companies have recognized the importance of organizational excellence. The difficult objective that companies seeking it and struggle for, during accomplishment of that objective the managers stands again numerous difficulties, to overlap these confrontations there are more than one choices, the most successful one is entrepreneurship which is been emerging business arena, so the companies are always searching for new opportunities of excellence.

Researchers paid attention to the entrepreneurship opportunity which is considered as a meaningful tools to achieve a distinguished performance. Several companies agreed that entrepreneurship is a key factor in create a competitive advantages and sustain it, but few of them have an appropriate knowledge about the subject and how to put it into practice. So, the companies are always search for the best methods to accomplish this goal to survive and progress inside local and export the market.

In Iraq the manufacturing environment faced different situations. They are (\*):

1. Instability of economic

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(\*) According to official sites like - (<http://www.iraqdirectory.com/Display NewsAr.aspx?id=75 6 4>)

2. Poor investment motivations
3. Corruption and bribery
4. Weaknesses of governance backing to both private and public industrial sector

In these circumstances, each company tried to face the environment by itself. So, general company of drugs and medical appliances in Nineveh/ Iraq, should be recognized either in projects, products, services, operations, and work relations. In practical words, the company must search for its own entrepreneurship opportunities and test which one contribute its excellence. In academic point of view, a contemporary researches admit that the study of entrepreneurship is still in its nascent stage (Benzing *et al.* 2009). In practical life Horris, *et al.*(2008) stressed on the reality of existence few companies hold true knowledge of entrepreneurship and innovation as well as put it into practice. Bosma & Schutjens, (2009) suggested a global entrepreneurship monitor (GEM) to measure entrepreneurial attitudes and activities. So, some researchers replied an answer to vital question which are "why some places are entrepreneurial and why others are not so entrepreneurial ?" (Malecki,2009). Or "why some people and not others identify entrepreneurial opportunity ?" (Shane & Venkataraman, 2000). In the company under study, managers were helped by some researchers to determine opportunities of entrepreneurship, they are summarized in four areas;

1. Supply Chain
2. Testing Process
3. Operations Costs
4. Customers Satisfaction

Then the paper tested the correlations of acting these areas on excellence model which consisted of seven excellence strategic dimensions (\*\*\*) (leadership, strategic planning, concentrating on the customer, scales, analysis and knowledge management, concentrating on labor power, treatment managements, results).

## **BACKGROUND**

### **Entrepreneurship (Definition and Opportunities)**

*How do we define Entrepreneurship ?*

- The term entrepreneurship is taken from the word (entreprindr) which is with two French sections, (entre) means between and (prendre) means taken, so it is taken between.
- The starting point of entrepreneurship refers to the contributions of the traditional micro economists like Richard Cantillon (1680-1734), who is the first economist used the word (Kelly, 2009)
- According to the godfather of entrepreneurship, Joseph Schumpeter (a creative destruction theory founder), entrepreneur is a person who is willing and able to convert a new idea on invention into a successful innovation (Schumpeter, 1950). Deals with a person who is willing to take in the name of an idea or spending much time as well as capital on an uncertain venture, putting his career and financial (security) in the line (Drucker, 1970)( Robert and Albert, 2009).
- It refers to an individual's ability to turn ideas into action. It includes creativity, innovation and risk taking, as well as the ability to plan and manage projects in order

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(\*\*) ESD for the (Excellence Strategic Dimensions)

to achieve objectives. This supports everyone in day-to-day life at home and in society, makes the employees more aware of the context of their work and better able to seize opportunities, and provides a foundation for entrepreneurs establishing a social or commercial activity (COM, 2006).

- Onuoha's (2007) definition concentrated on the practice of starting new organizations or revitalizing mature one (Onuoha, 2007: 21).
- It is a social and interactive process which entails both bargaining and learning (peltoniemi, 2009).

A weak economy, unstable and high bureaucratic business environment, added expenses of corruption and bribery are considered to be the main dilemma facing entrepreneurship (Benzing *et al.*, 2009: 63).

It is thought that overlapping these problems makes an entrepreneurship a useful tool to improve economic performance and social inclusion (job creation) at national level, a path to gain a competitive advantages at organizational level, and a good means for skills practice and development at personal level (Beasley, 2006).

Because entrepreneurship processes is controlled by perceived behavior, the attitudes will be important predictors of entrepreneurship activity (Bosma and schutjens, 2009). They are influenced by perceptions of individuals (Tornikoski and Kautonen, 2009). So, a competition to establish norms appears to be a required phase of entrepreneurship strategy (Mione, 2009).

#### *Entrepreneurship Opportunity*

To discover entrepreneurship opportunities, some researchers focused on the importance of individuals differences (Venkataraman,1997). According to (Norris, 2008)(Wlodarczyk, 2008), it is not possible to act on the opportunities until opportunities would be identified and documented (promotes or inhibits entrepreneurial).

To operate a entrepreneurship process, There must be motivations to the entrepreneur. Motivations can be divided into extrinsic, intrinsic rewards, independence or autonomy and family security(Robichaud & Roger, 2001). These processes are influenced by perceptions and attitudes of individuals as to how easy or difficult they think starting up a business would be (Tornikoski & Kantonen, 2009).

Some researchers found that the most important business success variables are the reputation for honesty, friendliness of entrepreneurs , social skills, and good customer services (Benzing *et al.*,2009)

To get entrepreneurship opportunity in a smooth way Norris (2008) introduced a model named as intentions – driven model to identify and act the opportunities. Others suggested the approach of Mohammad Yonus microfinance using analytical listening. He listen through walls of poor Bangladesh women (Sudhanshu, 2006).

Below an explanation of quadric classification adopted by the company under study top management.

*1. Supply Chain:* The supply chain is considered to be a combination of efforts to produce the final product or service and deliver it from the supplier to the customer. It involves management of demand to identify the raw materials, parts, manufacturing, storing, tracking the inventory, orders, order management, distribution through all channels and delivery to

the customer, it comprises the procedures of work and the partner's participation in managing the flow of products, services and information from design until delivery to the final customer. Thus, the supply chain is concerned with the flow of materials, information and cash (Murzyn, 2003).

Obtaining the raw materials represents the starting point and the consumption of products including the commodities and services to represent the final point.

*2. Testing Process:* Testing process involves more than one direction, including what is related to the quality testing system or testing the final product being manufactured. In this study, the focus will be on the testing process for the materials being purchased as it is important process for the company to identify the quality of these materials. This activity is a vitally assumes that there is a good relationship between the company and the supplier. This procedure should not be a kind of distrust in the supplier.

Testing processes include all testing, checking and scaling processes performed on materials or one of their characteristics and comparing them to the specifications, in order to define the level of consistency. The testing process could be conducted inside or outside the company.

*3. Operation Costs:* The classification of these costs needs to have a double or a triple classification. Some asserts that the operation costs comprises of two types of costs which are production costs (direct - indirect wages, inventory costs, devices exhaustion costs and costs of materials) (Davis et.al.,2003). Others stated that there are two classifications, one of them is binary and the other is triple. The binary classification includes (direct material costs and manufacturing indirect costs) (Horugren, 2005).

*4. Customer Satisfaction:* Companies still facing failures in managing customer's requirements, and most managers facing weakness in estimating the costs, schedules and risk management. Thus, the international efforts are directed to achieve production plans with quality according to the international specifications (Kato, 2004).

Many researchers defined the concept of customer satisfaction. Some of these definitions ranged between customer awareness cases or customer reactions and as an interaction process of the customer expectations, awareness and realization.

## **Excellence Strategic Dimensions**

### *What is excellence?*

The basic goal of management in the modern companies is to define the main characteristic that management should have (excellence), excellence emerges from two basic facts. The goal of the successful management is attempting to accomplish the excellence, and the decisions of management. The activities and systems it adopts, should be characterized with excellence. It is noticed that these facts are similar, because one of them cannot be accomplished without the other. They totally depend on investing the accumulated and renewed knowledge continuously and facilitate the methods of organizational learning in order to activate that knowledge in the real world (Al Sulami, 2002).

Excellence as a concept refers to a simple planning, owning the emergent meaning, having powerful and clear values, clarity of the assignment and sharing the vision of excellence. The excellence aspects should be at everything. The necessity of having standard criteria in accomplishment and finally enjoying work more than enjoying the results(Wiggenhorn, 2004). Achieving excellence needs to have permanent efforts in the company and also needs enough time and an unlimited cost. In this respect, Johnson (2007) outlined ten steps to achieve excellence:

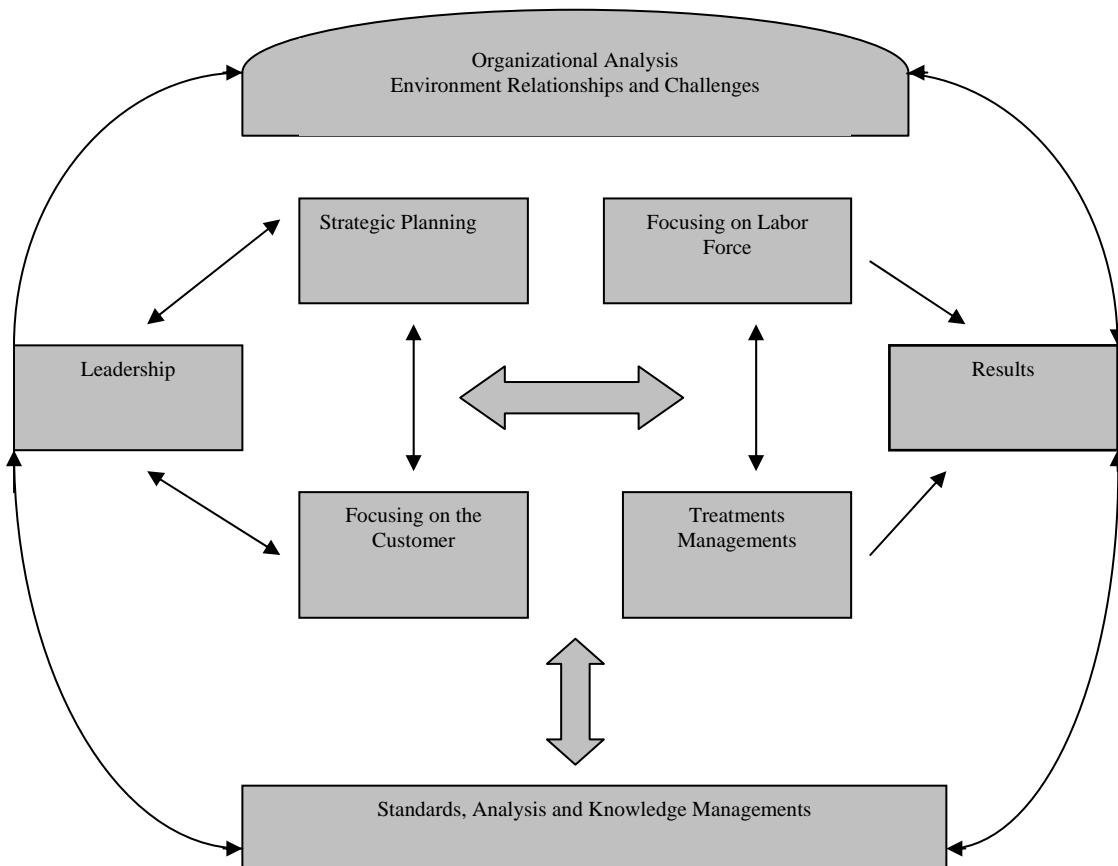
Using the approach of systems through Malcolm Baldrige framework.  
 Identifying the vision and creating the strategy of achievement.  
 Arrangement of culture, strategy, goals, scales and plans.  
 Applying the process of organizational learning.  
 Measuring the results and leading them.  
 Identifying and evaluating the degree of maturity.  
 Identifying the products , the services and needs to be achieved.  
 Understanding the correlations between the sub systems.  
 Focusing on the correlations in the chain of results.  
 Starting immediately without any cessions or going back.

Quality has become a national priority, because it contributes on excellence of different companies. Precisely, high quality is a strategic requirement for all businesses (Krajewski & Ritzman, 2005). Focusing on this point, Malcolm Baldrige Awards of excellence was established throughout the law of national improvement of quality No. 100-107 in 1987.

*What are the Dimensions of Excellence Model?*

The model consists of seven main dimensions and eighteen sub dimensions. The summation of these dimensions is (1000) points. It represents high value of the prize and this classification is the latest classification issued by NIST. The following is a representation of the main and sub dimensions of Malcolm Baldrige model (figure 1).

Figure 1: Dimensions of Malcolm Baldrige Model for Excellence



Adopted from: Hertz, (2009: iv)

Leadership (120) points (organizational leadership (70) points)(social and legal liability (50) points).

Strategic planning (85) points(strategy development (40) points)(strategy spread (45) points).

Concentrating on the customer (85) points(customer relatedness (40) points)(customer vote (45) points).

Scales, analysis and knowledge management (90) points(scales, analysis and improving the organizational performance (45) points)(information management)(Information technology and knowledge (45) points).

Concentrating on labor power (85) points(labor power incorporation (45) points)(labor power environment (40) points).

Treatment managements (85) points(labor system (35) points)(labor treatments (50) points).

Results (450) points(product and service results (100) points)(customer-oriented results (70) points)(financial results (70) points)(labor power results (70) points)(process effect results (70) points)(leadership results (70) points).

Kuratko *et al.* (1997) and Robichaud and Roger (2001) discovered indicators of a relationship between entrepreneurship motivations and business success. The current paper tread forward steps by investigating the correlation and influences relations between a selective entrepreneurship opportunity and ESD.

## **LITERATURES REVIEW**

Table 1 show a review of some studies (Procedures, Finding) dealing with paper's variables, analysis of the table provides the following distinctive features:

1. High level of selectivity and quality.
2. An increasing number of original and new research.
3. Disciplinary openness .
4. Specified focus on the environment and regional issues.
5. Partial correlation with the influence of geographical environment.

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Table 1: A Review of Procedures and Findings of Some Studies

No	Researchers / Years	Title of work	Procedures	Findings
1	Scott/2006	Entrepreneurship, Innovation and Industrial Development: Geography and the Creative Field Revisited	Investigation under the rubric of the creative field (the locationally - differentiated web of production activities and associated social relationships. describe how the creative field functions in three sites. All of these activities are deeply structured by relations of spatial-cum-organizational proximity and separation in the system of production. The creative field, however, is far from being a fully self-organizing entity, and it is susceptible to various kinds of breakdowns and distortions. Several policy issues raised by these problems are examined.	Addressing the question as to whether industrial agglomeration is an effect of producers' search for creative synergies, or whether such synergies are themselves simply a contingent outcome of agglomeration.
2	FULOP/2007	Middle Managers : Victims or Vanguard of the Entrepreneurial Movement ?	provide a critical review of a number of approaches to corporate entrepreneurship and focusing on the role and fate of middle managers as corporate entrepreneurs.	Identifying three approaches to corporate entrepreneurship and examines how each provides different views and prescriptions for the middle manager as corporate entrepreneur, Raises important issues for those seeking to implement entrepreneurial strategies or develop a general framework for innovation in large corporations.
3	Hamid/2009	Entrepreneurs and branding in an environment of mass customization and open innovation	Looking into the 'brand' concept under mass customization and explores some of these new challenges and opportunities	The framework <i>open sourced branding</i> offers entrepreneurs and small business owners, as well as brand managers and marketers, a lot of new opportunities and challenges as they strive to compete .
4	Devins/2009	Enterprise in deprived areas: what role for start-ups?	Focusing on a key aspect of the agenda - the formation of new businesses ( including self-employment) and provides an overview of development and implementation of new labor policy.	Implications for policy which question the rationale underpinning intervention, and draws attention to some issues which need to be considered if the policies are to meet the aspirations of government to the benefit of local communities.
5	Ronning/2009	Social capital: an asset or a liability to entrepreneurial activity	Outlined a framework for studying social capital related to entrepreneurial activity. Distinction between business- related and civil society- related social capital, a representative sample consisting of 712 Norwegian farm households in which 20% were engaged in entrepreneurial activity.	The analysis found evidence of enabling social capital in terms of diverse networks and in terms of strong ties that could facilitate cooperation. It also found disabling social capital in terms of overembeddedness.
6	Stok,et.al/2009	The advantage of the EFQM excellence model in business management and leadership.	Defines the endeavors of the enterprises that strive for better structure, behavior and communication paths to reach the final customers, the paper compare the enterprises holding a business excellence certificate with those that do not hold it	Establish that the enterprises differ in some characteristics of their management, which are defined by nine criteria
7	Aouni & Surlemont /2009	Towards a model of the learning needs of the effective entrepreneur	provide a unifying framework identifying the main learning needs of potential entrepreneurs. Based on the competency based theory, these, the paper pays great attention to defining the central concepts of 'entrepreneur', 'entrepreneurship' and 'the entrepreneurial process.'	The paper closes with a preliminary model of the learning needs of effective entrepreneurs and underlining the key dimensions that entrepreneurship programmes should incorporate.

## METHODOLOGY AND SURVEY

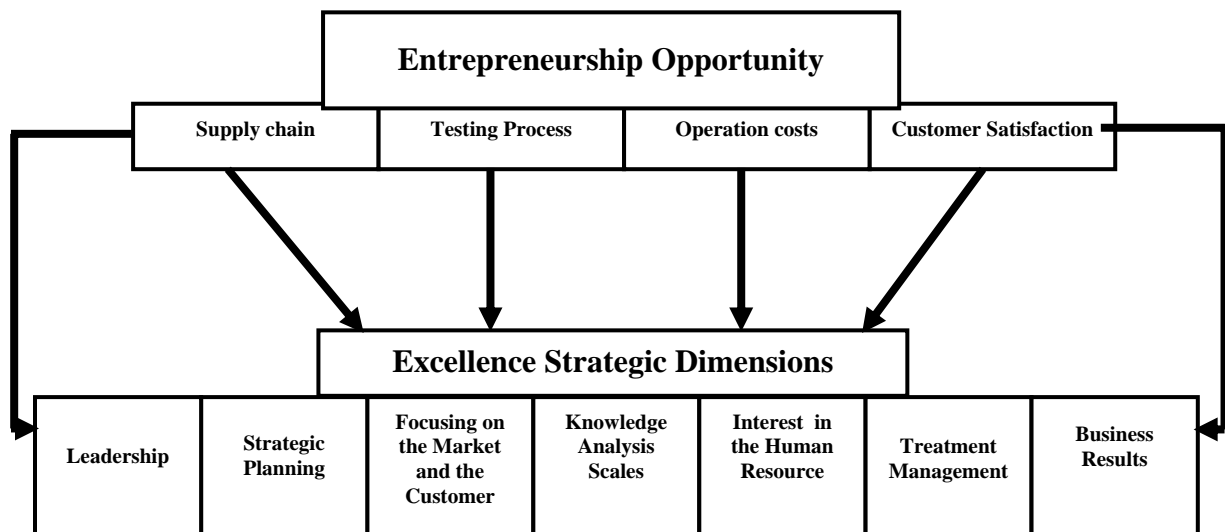
### Methodology

The current methodology may raise some questions within the context of data collected ; among these questions, a group of points were sorted out as in the following points:

1. What are the opportunities of entrepreneurship selected by managers of company under study?
2. To what extent the managers can possibly recognize the ESD within the internal environment?
3. What is the nature of the relationship and impact between the entrepreneurship opportunity and the ESD?
4. How the customer appreciate the company's attention as considered a relevant entrepreneurship opportunity?

The main contributions of the paper are represented by testing the relationship and the effect between the entrepreneurship opportunity and the ESD in the company of drug and medical appliances in Nineveh/ Iraq. This can be done by selecting and testing hypothetical model that includes two variables of the study (figure, 2).

Figure 2: Model Under Test



To test this model, the paper investigated three hypotheses, they are :

- There is a significant correlation between entrepreneurship opportunity and ESD .
- The entrepreneurship opportunity has a significant influence on the ESD .
- The management pays a good attention to the satisfaction of company's customers.

### Survey

Data used in this paper were collected by a questionnaire designed (\*) to cover the entrepreneurship opportunities and seven ESD. They use simple random sampling, the paper selected a studied society which was the General Company for Drugs and Medical Appliances in Nineveh, Iraq.

(\*) The questionnaire were written in Arabic language for relevance with the sample under study.



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Tables (2)(3) shows the details of random sample and its representative ness both for the managers and customers of the company under study.

Table 2: Description of personal characteristics of managers

Numbers of questionnaire papers distributed		Numbers of questionnaire papers gathered				Percentage of responsiveness %					
65		50				76					
Current employment post											
Top management			Middle management				Executive management				
No.		%		No.		%		No.		%	
1		2		20		40		29		58	
Scientific degree											
Phd.		Msc.		High diploma		Bsc.		Specific diploma		High School	
No.		%		No.		%		No.		%	
1		2		14		28		1		2	
24		48		5		10		5		10	
Age											
20-30				31-40				41-			
No.		%		No.		%		No.		%	
12		24		26		52		12		24	
Work experience											
1-5 years				6-10 years				11-			
No.		%		No.		%		No.		%	
29		58		15		30		6		12	

Table 3: Description of personal characteristics of customers

Numbers of questionnaire papers distributed		Numbers of questionnaire papers gathered				Percentage of responsiveness %					
80		50				62					
Scientific degree											
Phd.			Msc.		High diploma		Bsc.		Specific diploma		
No.		%		No.		%		No.		%	
3		6		1		2		3		6	
33		66		10		20					
Age											
20-30			31-40			41-50			51-		
No.		%		No.		%		No.		%	
27		54		12		24		6		12	
5		10									

## FINDINGS

The variables studied in the questionnaire were (74) variables. This number is relatively large leads to a difficulties in dealing with them. In order to decrease the number of factors to be easily processed and discover their importance and roles in analyzing the relationship amongst variables. Factor analysis used to avoid bias in selecting the variables that are characterized by a group of phenomena. Through this technique, the factors behind the phenomena and observations are identified as well as measured them and formulated the results as undoubtedly scientific theories according to the requirements and the reality of the local society of the sample.

By using the program SPSS, ( part of factor analysis), the total results of the subjective values for round factor matrix were obtained using the (Varimax) technique. It was shown that the measuring tool of the entrepreneurship opportunity factors included two factors arranged in a countdown order depending on their scope of contribution in explaining the

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variance. These were chosen essentially on the (Eigen value) whose value is larger than one (integer). These factors comprised 13 variables. Table (4).

Table 4: The Final Distribution of the Factors of the Phenomenon of (Entrepreneurship opportunity factors)

No.	Variables	The Factor or its main component (Pci)	Eigen value	% of factor influence in total variance pct of Var.
X3	Speed of response	Quick response provides equipment and experiences staff for testing and identifying the centers of costs.	6.390	49.156
X13	Mechanism of communicating with the customer			
X9	Maintaining cost monitoring and improving it			
X10	researches of cost decreasing and studying.			
X6	Inspection is done by an experienced staff			
X7	information about the materials and testing methods.			
X5	Possessing test equipments and tools.			
X6	Identifying the centers of costs.			
X1	Suitable sources of supply	suitable sources of supply, suppliers evaluation, and Commodity collection in which quality is considered.	5.429	41.758
X11	Commodity collection that meets the requirements.			
X12	Quality considerations in products			
X4	Availability of test materials			
X2	Suppliers evaluation			
Total				90.914

In order to identify the nature of the relationship between the entrepreneurship opportunity and ESD, table (5) indicates that there is a significant relationship between entrepreneurship opportunity which had been selected as a factor analysis output (supply chain and customer satisfaction) and ESD and its factors as a separately. So the first hypothesis was fulfilled on the level of the company.

Table (6) shows the effect of the entrepreneurship opportunities, as an independent variable, on the ESD as a dependant variable. The results of regression analysis performed on the company under study data indicated that there is a significant influence of the entrepreneurship opportunities on the ESD.

$F$  value was (3554.8) which is higher than its table value (4.0848) on the two degrees of freedom (1.48), and  $R^2$  was (0.986). Through tracing B coefficients and testing (t) for it, it was shown that the calculated value of  $t$  was (59.622), which is a significant value and higher than its table value (1.784), with a significant level and degrees of freedom of (1.48). So, the second hypothesis was fulfilled on the level of the company.

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Table 5: Correlation between the factors forming Entrepreneurship opportunity Factors and the factors forming ESD

Responding Variable Explanatory variable	Explanatory variable	Entrepreneurship Opportunity factors	
		First factor	Second factor
Leadership	First factor: organizational leadership and product inverse impact on the local society.	0.862	0.280
	Second factor: Social, moral and legal responsibility.	N.S 0.067	0.702
Strategic planning	First factor: Strategy development and diffusion.	0.880	0.310
	Second factor: Strategic planning operations.	N.S 0.018	0.733
Focusing on the market and customers	First factor: Identifying customer groups and using customer votes to establish relationships with customers.	0.336	0.780
	Second factor: Collecting complaints, solving and identifying measurements to go beyond customers' expectations.	0.723	NS 0.125
Standards, analysis and knowledge management	First factor: Management of information technologies	0.729	0.667
	Second factor: Knowledge management.	NS 0.189	NS -0.145
Taking care of the human resource	First factor: Integration of work force and developing their capacities and abilities.	0.737	0.605
	Second factor: Adopting high organizational culture and developing leaders' traits.	0.288	0.062
Treatment management	First factor: Identifying major work treatments and operation implementation.	0.609	NS 0.264
	Second factor: Identifying substantial abilities and reducing test costs.	0.503	0.553
Business results	First factor: Workforce ability, treatment effectiveness and social responsibility to satisfy the customer.	0.405	0.352
	Second factor: Workforce climate and major work treatments and indices to fulfill the company strategy and financial return standards.	NS -0.053	0.806
	Third factor: Financial performance and organizational citizenship.	0.624	NS 0.002
	Fourth factor: Customer important products and their indices for marketing performance.	0.495	NS 0.172

*\*P<0.05 N.S.: Not significant.*

Table 6: The Effect of Entrepreneurship opportunities Factors on the ESD at overall level

Responding Variable Explanatory variable	Entrepreneurship opportunities		R2	F		d.f.	N
	B0	B1		Calculated	Table		
ESD	2.659	0.993 *(59.622)	0.986	3554.83	4.0848	49 (1.48)	50

*The table was prepared by the researcher depending on the calculator values, ( ) indicates the calculated value of (t)., \*P<0.05, N.S.: Not significant.*

While the influence of each factors of Entrepreneurship opportunities on the ESD can be mentioned as:

Table 7: The Significant Effects of the Supply Chain on the ESD

Responding Variable Explanatory variable	Entrepreneurship opportunities		R2	F		d.f.	N
	B0	B1		Calculated	Table		
ESD	3.417 -	0.975 * (30.156)	0.949	909.41	4.0848	49 (1.48)	50

*The table was prepared by the researcher depending on the calculator values, ( ) indicates the calculated value of (t). \*P<0.05 N.S.: Not significant*

Table 8: The Significant Influence of Testing Process on the ESD

Responding Variable Explanatory variable	Entrepreneurship opportunities		R2	F		d.f.	N
	B0	B1		Calculated	Table		
ESD	-2.674	0.973 * (29.306)	0.949	858.845	4.0848	49 (1.48)	50

*The table was prepared by the researcher depending on the calculator values, ( ) indicates the calculated value of (t). \*P<0.05 N.S.: Not significant*

Table 9: The Significant Influence of the Operational Costs on the ESD

Responding Variable Explanatory variable	Entrepreneurship opportunities		R2	F		d.f.	N
	B0	B1		Calculated	Table		
ESD	-4.371	0.985 * (39.630)	0.970	1570.5 42	4.0848	49 (1.48)	50

*The table was prepared by the researcher depending on the calculator values, ( ) indicates the calculated value of (t). \*P<0.05 N.S.: Not significant*

Table 10: The Significant Influence of Customer Satisfaction on the ESD

Responding Variable Explanatory variable	Entrepreneurship opportunities		R2	F		d.f.	N
	B0	B1		Calculated	Table		
ESD	2.247	0.971 * (28.032)	0.941	785.775	4.0848	49 (1.48)	50

*The table was prepared by the researcher depending on the calculator values, ( ) indicates the calculated value of (t). \*P<0.05 N.S.: Not significant*

Using SPSS program, the total results of the subjective values of the correlation reduced matrix or the matrix of the round factors were obtained using the (Varimax) technique. It was shown that the measuring tool of the factors of the phenomenon (customer satisfaction) included four factors arranged in a descending depending on their extent of participation in explaining the variance. These were chosen essentially on the (eigen value) whose value is higher than one (integer). These factors comprised (22) variables (table (11)). So, the third hypothesis was fulfilled.

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Table 11: The Final Distribution of the Factor (customer satisfaction) Phenomenon

No.	Variables	The Factor or its main component (Pci)	Eigen value	% of factor influence in total variance pct of Var.
X2	Response as soon as possible	Responding to our requirements and establishing good relationship through possessing information system and communication means.	3.989	18.130
X3	Market survey to identify the requirements			
X4	Establishing relationships with customers.			
X5	Quick communication means			
X8	Information system to develop products.			
X9	Offering a suitable collection of products.			
X10	Offering high quality products.			
X22	Conducting a periodic evaluation of our degree of satisfaction.			
X1	Meeting needs continuously.	Having the necessary flexibility in the case of demand change and pursuing innovations to offer products superior than the competitors' products.	3.924	17.837
X6	Solve the complaints seriously.			
X12	Flexibility when changing the order.			
X13	Availability of the desired specifications.			
X19	Abiding by the quality when designing.			
X16	Pursuing new innovations and products,			
X18	Services superior to competitors' services.	Employees enjoy flexibility and necessary experience of dealing	2.531	11.504
X14	Employees have flexibility in dealing.			
X15	Employees enjoy experienced performance.			
X17	High loyalty due to problem solving.			
X7	Means and mechanisms to obtain information.	Offering products in time, replacing and getting back products out of quality as well as offering financial facilities.	2.504	11.382
X11	Offering products in time.			
X20	Replacing and getting back products out of quality.			
X21	Offering financial facilities			
Total				58.852%

## DISCUSSION AND CONCLUSIONS

Academically specking the current study were prepared to contribute two scientific fields of study; the first was the organizational theory and the second one was the operations management discipline . The practical implication of the current study was to support the top management of the company under study according to two orientations:

- Identification the entrepreneurship opportunities and do some investment to reach to the excellence in the company performance.
- Uncover the mechanism of being closer to company's customers . Eventually uncover their requirements and seeking achieve them.

The current study faced some limitations related to the difficulties of the subject dimensions in part of the respondents, and thus this required to interpret some question for the respondents themselves by the researcher without affecting bias policy, below the points that was concluded:

1. A significant correlation has been found between entrepreneurship opportunities and the ESD. Each one of four opportunities (supply chain, testing, operation costs and

customer's satisfaction) has correlated with the seven dimensions of excellence upon the company level at the company under study.

2. There has been a significant effect of entrepreneurship opportunities on the ESD as each opportunities affects the ESD. Findings showed that operation costs have the greatest effect than other factors.
3. Replies of a sample of the company's customers showed that owning rapid communications help recognizing their needs and responding to them, increasing their satisfaction. They have supported the idea that recognizing the extent of customer's satisfaction achieved through performing a periodical assessment of their degree of satisfaction about the company's outputs.
4. The customers questioned, confirmed that the company is near to their desired specifications, besides its ability to offer services superior to those of competitors, that explain why the company has increasing marketing share in the local market.
5. Replies of the company's customers showed that the company employees have flexibility in dealing with the customers regarding the availability of various drugs and medical requisites which help to increase the customer's loyalty to company's trade mark.
6. The company should be more interested in training the employees on the contemporary methods used in checking process and secondhand materials in order to increase their skills and experiences, which is in turn reduces checking time and speeds up achievements.
7. The company should perform a fair and real assessment system for suppliers such as Suppliers Rating System (SRS). So, it can obtain proper supply sources which is most important means in determining the key supplier.
8. The company should establish efficient standards to assess leaders and employees performance in order to identify drawbacks (defects) and make suitable corrective actions in the future.
9. The company's management should focus on the product's positive effect on the society. It is necessary to adopt the concepts of green manufacturing in order to avoid production waste and losses.
10. It is necessary to activate the role of information systems within the company in collecting, arranging and making use of the data; besides realizing the best methods of operation and keeping up necessary information for stockholders which in turn be useful in taking decisions in advance.
11. The paper proposes that the distinctive relationships with the customers should be established through employing proper means such as the customer vote, realizing the marked problems and working hard with the customers to resolve them.
12. In order to activate the entrepreneurship awareness in Iraq, the paper suggested a national entrepreneurship monitor called Iraqi's Entrepreneurship Monitor (IEM) to measure the attitudes and activities of Iraqi's businessmen, also suggested a social capital measures which encourages an entrepreneurship measures at a national level.
13. The paper invited the institutions that deals with entrepreneurship to develop a comprehensive thinking towards entrepreneurship either by conducting a national campaigns (like global entrepreneurship week), or incorporation the subject into education system, or preparing a good protecting polices of new ideas producers, or by establishing an annual entrepreneurship national award.
14. The study suggest some points for future research. First, deploying the recommendations of the study to all Iraqi's industrial organizations. Secondly, working on researches and studies related to applying the dimensions of Malcolm Baldrige prize, or study the motivations of entrepreneurship in the industrial sector in Iraq.

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## **EVALUATING AIRPORT EFFICIENCY USING DATA ENVELOPMENT ANALYSIS<sup>1</sup>**

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### **Abstract**

Performance measurements have become an issue of the utmost importance in the airport business, as airports become more competitive and face the challenging market environment. Thus, the analysis of airport efficiency might help to increase competitiveness. The paper aims to assess the efficiency of Croatian airports over the five-year period 2004-2008 using Data Envelopment Analysis (DEA). DEA has been proven as a valuable performance evaluation methodology when homogeneous decision-making units (DMUs) have multiple inputs and outputs and operate in similar conditions. Initially, DEA has been deployed to analyse the efficiency of Croatian airports in 2008. The analysis has revealed that only Split Airport and Dubrovnik Airport are relative efficient performers. DEA provides estimates of the potential improvement that can be made by inefficient airports. The analysis has then been extended by utilising window analysis, which is useful for detecting efficiency trends of DMUs over time. It has shown significant disparities in efficiencies among the airports over the period examined.

Key Words: Data Envelopment Analysis, efficiency, competitiveness, Croatian airports

Topic Groups: Industry, area or region specific studies, International business

### **INTRODUCTION**

The efficiency of an airport is one of the most significant determinants of the success and progress in the airport business. With the processes of deregulation and liberalization within the air transport industry, airports began to contend with each other and to improve their

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efficiency in order to have a competitive edge. In that sense, it is essential to realize which airports are performing well and which are underperforming, as well as to indicate relative inefficiencies in order to improve their performance.

Data Envelopment Analysis (DEA) is a non-parametric multiple input-output methodology that assesses the relative efficiency of decision-making units (DMUs) using a linear programming based model. In that context, airports operate in similar conditions and can be regarded as decision-making entities and uniform decision-making units, with regard to both input and output components.

The main objective of the paper is to apply Data Envelopment Analysis to analyse the efficiency and overall performance of Croatian airports. The DEA model is also very useful in indicating relative inefficiencies in order to improve the performance. The paper attempts to investigate the efficiency of Croatian airports during the year 2008 and the period 2004-2008.

The paper is structured as follows: Section 2 provides the results of previous studies on airport efficiency applying Data Envelopment Analysis. This is followed by introducing the DEA method and describing its main characteristics. Then, in Section 4, data and methodology are presented. The following section presents the results of the DEA analysis and its discussion. Finally, certain conclusions emerging from the previous sections are outlined and some proposals for the improvement of future research are indicated.

## **LITERATURE REVIEW**

Assessing the efficiency of airports by applying Data Envelopment Analysis has been the subject of much research in the recent past (Martin and Roman, 2001, 2006, 2008; Abbott and Wu, 2002; Yoshida and Fujimoto, 2004; Yu, 2004; Malighetti et al., 2007; Barros and Dieke, 2007, 2008; Fung et al., 2008; Tapiador et al., 2008; Chi-Lok and Zhang, 2009).

Previous research on the assessment of airport efficiency through the use of DEA methods reveals the following results:

- significant differences in efficiencies among airports depending on their geographical location (Sarkis, 2000; Yu, 2004; Yoshida and Fujimoto, 2004; Lin and Hong, 2006; Tapiador et al., 2008; Fung et al., 2008)
- airports with more competition are more efficient than their counterparts (Yu, 2004; Chi-Lok and Zhang, 2009)
- partially and fully privatised airports are more efficient than publicly owned ones (Vogel, 2005)
- fully private airports tend to have higher efficiency scores than partially private airport authorities (Barros and Dieke, 2007)
- airports with higher WLU (work load unit) tend to be more efficient than those with lower WLU (Barros and Dieke, 2007), which can be explained by the economies of scale (Graham, 2005)
- efficiency is related to airports` size i.e. large airports (with more than 5 million passengers) are more efficient than domestic and regional ones (Malighetti et al., 2007; Barros and Dieke, 2007; Yoshida and Fujimoto, 2004; Martin and Roman, 2008)
- the status of public-owned management company has a positive impact on the efficiency (Curi et al., 2010)

- the changes in managerial style influence airport performance (Pacheco and Fernandes, 2003; Pacheco et al., 2006)

Numerous studies evidently confirm that Data Envelopment Analysis has been a widely utilized method in the literature on airport efficiency and productivity.

### **DATA ENVELOPMENT ANALYSIS**

In order to measure the efficiency of the airports, we apply the widely utilised and useful methodology - Data Envelopment Analysis. It is a methodology which enables comparative efficiency analysis of the decision-making units (DMUs). It uses a specific set of resource inputs in order to produce a specific set of outputs without knowing the form specification of the relation between inputs and outputs. The DEA is a nonparametric efficiency measurement that uses linear programming methods to construct a piecewise linear surface or frontier over the data. Through the reference to this frontier, we can determine the position of inefficient units and identify the sources and the amounts of inefficiency.

Graham (2005) notes that the key advantage of DEA is that the weights for the inputs and outputs are not pre-determined but instead are the results of the linear programming procedure. She also outlines that DEA is often a more attractive technique than other methods because it has less demanding data requirements and, therefore, has been used more extensively to measure airport performance.

Let us suppose there are n DMUs: DMU<sub>1</sub>, DMU<sub>2</sub>, ... , DMU<sub>n</sub>. Some common input and output items for each of these j = 1, ... , n DMUs are selected as follows (Cooper et al., 2006):

1. Numerical data are available for each input and output, with the data assumed to be positive for all DMUs;
2. The items (inputs, outputs and choice of DMUs) should reflect an analyst's or a manager's interest in the components that will enter into the relative efficiency evaluations of the DMUs;
3. In principle, smaller input amounts are preferable and larger output amounts are preferable so the efficiency scores should reflect these principles;
4. The measurement units of the different inputs and outputs need not be congruent.

The determination of the efficiency score of the ith airport in a sample of N airports in the constant returns to scale will be based on one of the fundamental models of DEA: CCR model. Efficiency is defined as the ratio of weighted sum of outputs to weighted sum of inputs. The fundamental idea of the model is to determine the weight that maximises the goal function: ratio of virtual inputs and outputs, after their establishment through the relevant weights. More precisely: let us suppose to have available data on some n decision-making units that utilise the m of the same inputs and realise the s of the same outputs. In order to determine the values for the inputs' "weights" ( $v_i$ ) ( $i = 1, \dots, m$ ) and the outputs' "weights" ( $u_r$ ) ( $r = 1, \dots, s$ ) which represent the variables, we are solving the following problem of the fraction programming (Cooper et al., 2000):

$$\max \quad \theta = \frac{u_1 y_{10} + u_2 y_{20} + \dots + u_s y_{s0}}{v_1 x_{10} + v_2 x_{20} + \dots + v_m x_{m0}}$$

s.t.

$$\frac{u_1 y_{1j} + \dots + u_s y_{sj}}{v_1 x_{1j} + \dots + v_m x_{mj}} \leq 1 \quad (j = 1, \dots, n)$$

$$v_1, v_2, \dots, v_m \geq 0$$

$$u_1, u_2, \dots, u_s \geq 0$$

The variables  $(u_r)$  ( $r = 1, \dots, s$ ) and  $(v_i)$  ( $i = 1, \dots, m$ ) are determined through the CCR model for each DMU, they are not previously given. Consequently, the data on inputs and outputs enters the goal function. The restrictions mean that the ratio of "virtual outputs" and "virtual inputs" cannot cross the value of 1, for each DMU. If the optimal value is  $\theta^* = \max \theta = 1$ , the efficiency for the relevant DMU has been reached.

### **DATA AND METHODOLOGY**

There are seven airports handling international air traffic in the Republic of Croatia – Zagreb, Split, Dubrovnik, Zadar, Rijeka, Pula and Osijek. A 55% stake in each is owned by the state, with the remaining 45% divided between different levels of regional and local authorities. In terms of total passenger volume, Croatia airports recorded 4,897.975 passengers in 2009 ([http:// www.mmpi.hr](http://www.mmpi.hr)). The airports of Zagreb, Split and Dubrovnik amount to approximately 85% of the total passenger traffic in Croatia.

The goal of the analysis is to make the cross-airports comparison of performance. For this purpose, CCR input-oriented model (constant returns to scale) and the DEA-SolverPro6.0 software program have been utilised. Adequate choice of inputs and outputs represents an important step in the DEA utilisation. Two variables make up the inputs: operating costs and the number of employees. The output is measured by one variable: total revenues. All input and output data were taken from the annual reports of the airports, which provide information on the airports` physical and financial parameters. The combination of input and output variables meets the DEA convention that the minimum number of DMU observations should be greater than two times the number of inputs plus outputs.

As Mantri (2008) notes, conventional DEA is static, i.e. the analysis does not consider the time frame to which the input consumption and output production refers. However, multi-period efficiency measurement is possible through window analysis. Initiated by Charnes et al. (1985), window analysis is a time-dependent version of DEA with various applications. The input/output data of the DMUs for a number of consecutive periods (i.e. a window) are used to assess the efficiency of each DMU in each period.

After selecting input and output variables in the first stage, the efficiency scores of Croatian airports in 2008 are analysed. This is followed by identifying sources and amounts of relative inefficiency. In the second stage we proceed with window analysis, which is applied to provide trend information on the relative efficiency scores of Croatian airports over the five-year period 2004-2008.

### **DEA RESULTS AND DISCUSSION**

The correlation analysis for seven Croatian airports shows that there is a strong relationship between inputs and output: between operating costs and revenues 0.96453257, and between the number of employees and revenues 0.85041342 (Table 1).

Table 1: Correlation matrix

	OPER. COSTS	EMPLOYEES	REVENUES
OPER. COSTS	1	0.937752	0.96453257
EMPLOYEES	0.9377518	1	0.85041342
REVENUES	0.9645326	0.850413	1

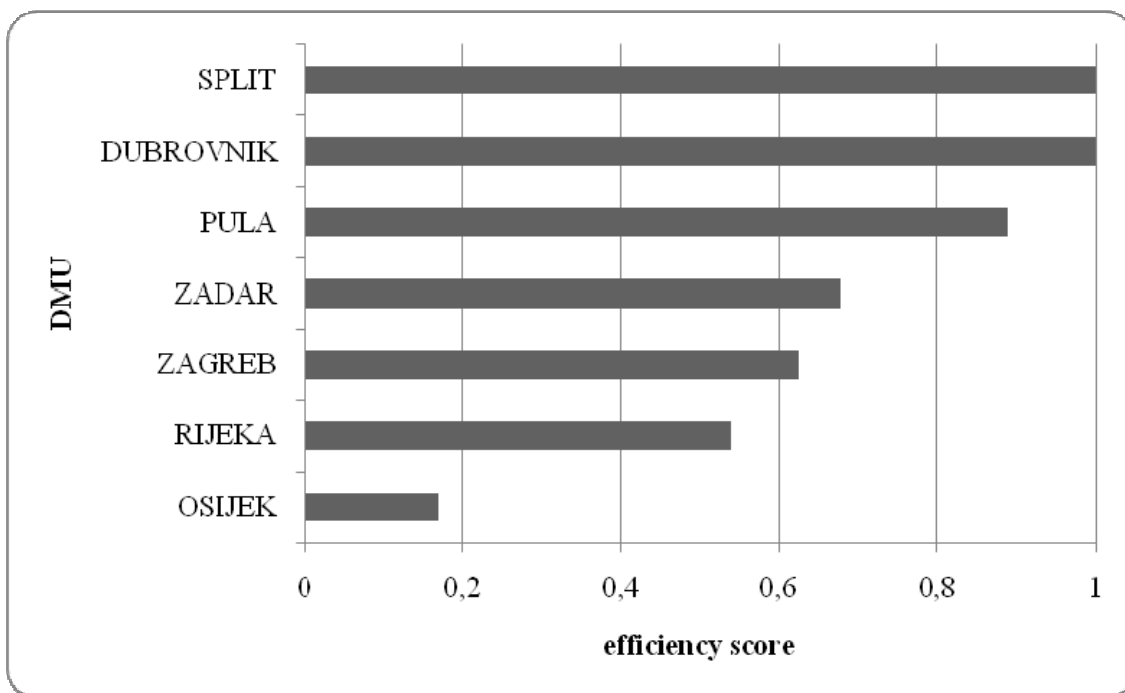
The results of relative efficiency for seven Croatian airports are presented in Table 2. The position in the ranking based on these scores is displayed in the third column.

Table 2: Efficiency scores, 2008

DMU	Score	Rank
DUBROVNIK	1	1
OSIJEK	0.168968	7
PULA	0.887644	3
RIJEKA	0.539099	6
SPLIT	1	1
ZADAR	0.677358	4
ZAGREB	0.624301	5

The efficiency indices diverge from 0.168968 to 1. These efficiency scores show that only Dubrovnik Airport and Split Airport are relative efficient airports having a max-efficiency value of 1.0.

Figure 1: Relative efficiency scores, 2008



That would mean that they could not increase the outputs without increasing the inputs, nor reduce the inputs without reducing the outputs. Osijek's efficiency is 0.168968, i.e. Osijek Airport achieved only approximately 16% of Dubrovnik's and Split's efficiency. Pula Airport is

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approximately 89% efficient compared to Dubrovnik and Split while Rijeka achieved 54% efficiency. Zadar achieved 68% efficiency and Zagreb approximately 62% of Dubrovnik's and Split's efficiency. Relative efficiency scores are also shown in Figure 1.

Table 3 contains the improvements required in order to make inefficient airports efficient. As seen in Table 3, results suggest that all inefficient airports could improve their efficiency on both input variables, i.e. these airports might reduce some of the inputs. Having this information, airport managers should concentrate their efforts in enhancing the performance.

Table 3: Projections values

No.	DMU I/O	Score Data	Projection	Difference	%
1	DUBROVNIK	1			
	OPER. COSTS	40012470	40012470	0	0.00%
	EMPLOYEES	350	350	0	0.00%
	REVENUES	152301507	152301507	0	0.00%
2	OSIJEK	0.16896829			
	OPER. COSTS	4320385	730008.075	-3590376.9	-83.10%
	EMPLOYEES	42	6.38557995	-35.61442	-84.80%
	REVENUES	2778667	2778667	0	0.00%
3	PULA	0.88764376			
	OPER. COSTS	17624641	15644402.6	-1980238.4	-11.24%
	EMPLOYEES	171	136.845861	-34.154139	-19.97%
	REVENUES	59548088	59548088	0	0.00%
4	RIJEKA	0.53909907			
	OPER. COSTS	4369012	2355330.31	-2013681.7	-46.09%
	EMPLOYEES	76	20.6027173	-55.397283	-72.89%
	REVENUES	8965214	8965214	0	0.00%
5	SPLIT	1			
	OPER. COSTS	62267000	62267000	0	0.00%
	EMPLOYEES	380	380	0	0.00%
	REVENUES	184865000	184865000	0	0.00%
6	ZADAR	0.6773584			
	OPER. COSTS	7886054	5341684.93	-2544369.1	-32.26%
	EMPLOYEES	99	46.7251765	-52.274823	-52.80%
	REVENUES	20332328	20332328	0	0.00%
7	ZAGREB	0.62430105			
	OPER. COSTS	78889943	49251074.5	-29638868	-37.57%
	EMPLOYEES	875	430.812596	-444.1874	-50.76%
	REVENUES	187466879	187466879	0	0.00%

Since the model is input-orientated, output is considered as a constant. That is why projections suggest decreasing the inputs for all inefficient airports in order to become relative efficient. The total number of employees should decrease as follows: Osijek Airport by about 85%, Pula Airport 20%, Rijeka Airport 73%, Zadar Airport 53% and Zagreb 51%. With regard to expenditures, Osijek Airport should decrease expenditures by about 83%, Zadar Airport should decrease expenditures by 32%, Rijeka Airport by 46%, Pula Airport by

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11%, while Zagreb Airport should decrease expenditures by 37%. These percentages suggest significant surplus of both employees and expenditures for all inefficient airports.

One of the advantages of DEA lies in its ability to identify the area of excess. In that context, the basic DEA efficiency results are extended by decomposing the efficiency scores. This decomposition indicates the sources of inefficiency. It is interesting to examine an excess in an input (or a shortage in an output) from the optimal solution of the model. DEA is able to identify the exact amount of excess or slack. In that way, it helps allocate resources between airports more efficiently.

Table 4: Decomposition of efficiency score

DMU	Score	Excess OPER.COSTS S-(1)	Excess EMPLOYEES S-(2)	Shortage REVENUES S+(1)
DUBROVNIK	1	0	0	0
OSIJEK	0.168968	0	0.711088	0
PULA	0.887644	0	14.94122	0
RIJEKA	0.539099	0	20.36881	0
SPLIT	1	0	0	0
ZADAR	0.677358	0	20.33331	0
ZAGREB	0.624301	0	115.4508	0

The Table 4 decomposes inefficiency into each input/output factor. It indicates that the excess of employees dominates the other input in inefficiency. These pieces of information further increase the usefulness of DEA as a means of assessing airports' performances.

Until now we have dealt with DEA under static conditions. When the time is not considered, the efficiency results can be biased. In order to deal with this, further analysis is extended by adopting DEA window analysis approach. The basic idea of window analysis is to regard each DMU as if it were different DMU in each of the reporting dates: a DMU is compared to itself over time. It is useful for detecting efficiency trends of DMU over time. The efficiency of Croatian airports for the period 2004-2008 is displayed in Table 5 and the efficiency of these airports is analysed over time. As it can be noted in the last row in Table 5, results indicate that the overall average efficiencies of Croatian airports haven't shown considerable fluctuations over the five-year period analysed.

Table 6 contains the averages through a window. The first window incorporates years 2004, 2005 and 2006. Generally, when a new period is introduced into a window, the earliest period is dropped. In the next window the year 2004 will be dropped and year the 2007 will be added to the window. The analysis is over when the window analyses years 2006, 2007 and 2008.

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Table 5: DEA-CCR window analysis for airport efficiency

	2004	2005	2006	2007	2008	Average	C-Average
DBV	0.947094	1	1			0.982365	
		1	1	0.938243		0.979414	
			1	0.88464	1	0.961547	0.974442
OSI	0.182574	0.390865	0.189535			0.254325	
		0.390865	0.189535	0.131413		0.237271	
			0.189535	0.131413	0.160851	0.1606	0.217398
PUL	0.732631	0.863112	0.910461			0.835401	
		0.863112	0.910461	0.861166		0.878246	
			0.910461	0.843008	0.845797	0.866422	0.860023
RIJ	0.449493	0.636746	0.416383			0.500874	
		0.636746	0.416383	0.467134		0.506754	
			0.416383	0.467134	0.451373	0.444963	0.484197
SPL	0.717182	0.84154	1			0.852907	
		0.806261	0.941383	1		0.915882	
			0.876742	0.931606	1	0.936116	0.901635
ZAD	0.409132	0.486762	0.425828			0.440574	
		0.486762	0.425828	0.496994		0.469861	
			0.425828	0.5001	0.567134	0.497687	0.469374
ZAG	0.741541	0.7237	0.485737			0.650326	
		0.720313	0.484632	0.527461		0.577469	
			0.486466	0.524822	0.556698	0.522662	0.583485
Average	0.597092	0.703342	0.623885	0.621795	0.654551		

Table 6: Average through window

	2004-2005-2006	2005-2006-2007	2006-2007-2008
DUBROVNIK	0.982365	0.979414	0.961547
OSIJEK	0.254325	0.237271	0.1606
PULA	0.835401	0.878246	0.866422
RIJEKA	0.500874	0.506754	0.444963
SPLIT	0.852907	0.915882	0.936116
ZADAR	0.440574	0.469861	0.497687
ZAGREB	0.650326	0.577469	0.522662

Figure 2 shows relative efficiency trend for all analysed airports. It can be observed that Dubrovnik Airport achieved the best average scores for all three windows.

Consequently, the final average score for Dubrovnik Airport is the best one equals 0.974442 (column C-Average). Split Airport is estimated as the second with score 0.901635 and so on.



Figure 2: Relative efficiency variation through window

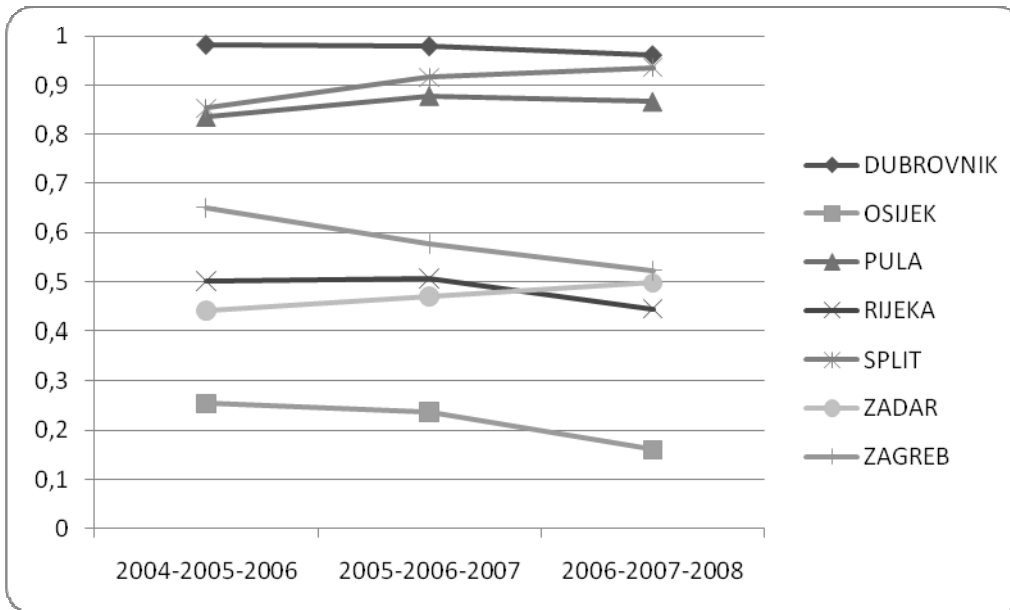


Figure 3: Relative efficiency variation by term

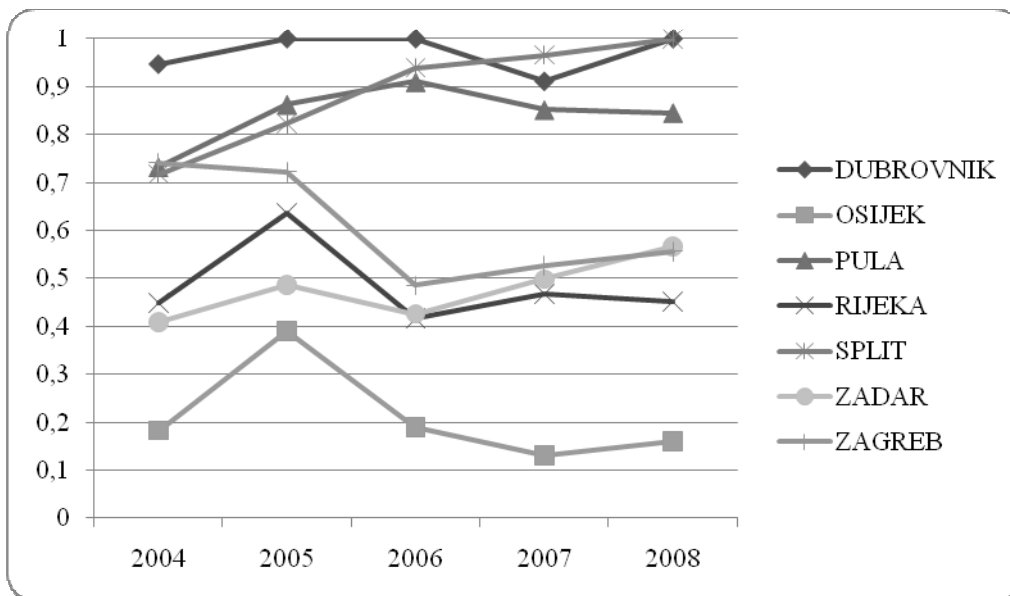


Figure 3 presents relative efficiency variation by term. When considering each year of the period 2004-2008, the results indicate no regular trend in average airport efficiency variation. Furthermore, a significant difference in relative efficiency among Croatian airports is obvious. Figure 3 shows that Dubrovnik Airport, as well as Split Airport, were the most efficient on average, followed by Pula Airport and Zadar Airport which reveal relatively steady efficiency trends. In contrast, Zagreb Airport and Rijeka Airport recorded some considerable drops in efficiency scores in the last 3 consecutive years (2006-2008), whereas Osijek Airport was the least efficient and, at the same time, it is the airport with fewest passengers per year in Croatia.

### CONCLUSIONS AND IMPLICATIONS

This paper uses the well established Data Envelopment Analysis method to compare the relative efficiencies of Croatian airports. The method is very useful since it also provides

estimates of the potential improvement that can be made by inefficient DMUs. In this case, an input-oriented CCR model has been utilised to assess the overall efficiency of seven Croatian airports in the year 2008 and over the five-year period 2004-2008.

This paper provides new empirical evidence on the trends in efficiency of Croatian airports and, consequently, it contributes to the existing airport efficiency literature by presenting an assessment of the efficiency of Croatian airports by applying the Data Envelopment Analysis methodology. To the best extent of authors' knowledge, this is the first time that this data set, i.e. input and output variables, have been applied to compute the efficiency of the airports in Croatia through the use of DEA methods.

Input data include operating costs and the number of employees while output data is comprised of total revenues. In that sense, the correlation analysis shows the existence of strong correlation between inputs and output. The analysis has revealed that only Split Airport and Dubrovnik Airport are relative efficient performers in comparison to the other airports. Projection values also identified the amounts of relative inefficiency and suggested improvements for all inefficient airports. In that context, the results revealed that all inefficient airports could improve their efficiency by reducing some of the inputs. Furthermore, by decomposing the efficiency scores DEA identifies the area of excess and, in that way, helps allocate resources more efficiently between airports. The decomposition of efficiency scores indicates that the excess of employees dominates the other input in inefficiency. In order to avoid the use of a single year to calculate airports' efficiency, the analysis has been extended by utilising window analysis, which is useful for detecting efficiency trends of DMUs over time. The length of the window is chosen as three, containing periods 2004-2005-2006, 2005-2006-2007 and 2006-2007-2008. The analysis has shown significant disparities in efficiencies among the airports over the period examined. However, the overall average efficiencies of Croatian airports haven't indicated considerable fluctuations over the five-year period analysed.

It is worth mentioning some potential limitations of our analysis. It primarily refers to model limitations, namely the number of input and output variables. Bearing in mind that there are seven airports handling international air traffic in Croatia, the number of input and output variables was limited. Given the number of DMUs has to be at least twice the sum of the input and output variables, only two inputs and one output were considered when estimating the efficiency scores of Croatian airports. In that respect, the influence of other variables on the performance of Croatian airports is missing and further research is needed.

The research presented here can be extended and improved in at least several ways. First, by continuing to measure airport efficiency, it can be investigated how it has evolved over time. There are several areas worthy of consideration for further research. The input and output variables are not exhaustive. Other inputs (e.g. terminal area, runway area, number of check-in counters, number of gates, number of aircraft parking positions, number of baggage claims, etc.) and outputs (e.g. number of passengers, aircraft movements, amount of cargo handled, commercial revenues, aeronautical revenues, etc.) could be included into the model and analysed. Another interesting direction of research is to compare the efficiency of Croatian airports with airports in other countries, i.e. relatively similar markets, particularly with regard to size and ownership of airports. The analysis can identify and highlight similarities and differences between airport efficiency in Croatia and other countries. It would also allow the positioning of Croatian airports in a national and international context, i.e. ranking of Croatian airports in a wider context. The above mentioned issues should be considered for further research.

Based on the results of the analysis, there are some suggestions concerning airport managers. By comparing the performances of an airport with the results of the other airports certain pieces of information for self improvements can be gained. This information requires special attention as it can be important in order to enhance the overall airports` performance. In that sense, airport managers should evaluate and benchmark their performances with airports having similar characteristics. The results can also be interesting for airlines. Due to ever-increasing competition from low-cost airlines, they will increasingly focus on efficient airports and choose them for their operations. Furthermore, counties and municipalities could also be interested in performance evaluation of Croatian airports as efficient airports result in an increase in tourist flows and further development of their regions.

With regard to the methodology, the airports` performance in this paper was evaluated by the DEA model. However, other methods (e.g. stochastic frontier analysis, total factor productivity) should be applied as well in order to confirm the results and to provide further information on the subject.

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## INTERNATIONAL BUSINESS STUDENTS' ATTITUDES OF ENTREPRENEURSHIP

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### Abstract

The study examined attitudes of business students (n = 106) towards entrepreneurship in an international business management degree programme in Finland. The findings indicated that male students did not have more entrepreneurial features than female students, but they had more motivational factors and interest for entrepreneurship than female students. The barriers of entrepreneurship are lower for male students than the female students. The entrepreneurial features and characteristics are positively related to the interest for one's own enterprise and to the entrepreneurial motives. In addition, motivational factors are negatively correlated to the barriers of entrepreneurship. The findings illustrated that even if there was an entrepreneur in the core family or among acquaintances, it had no statistically significant influence on the entrepreneurial intention of the students. Further, to summarise the findings related to the stability of attitudes, it seems that they do not differ between the academic study groups or change during the study years, but remain the same.

Key words: attitudes, entrepreneurship, gender, intention, students

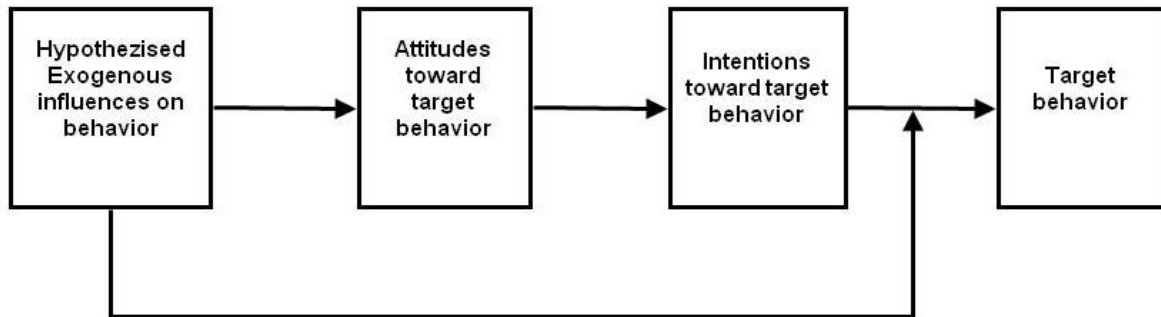
### INTRODUCTION

Attitudes toward the behaviour, subjective norms, and perceptions of behavioural control have influence on one's own intentions. According to the theory of planned behaviour, people act in accordance with their intentions and perceptions of control over the behaviour. (Ajzen, 2001). For example, to start a business is intentional and can best be predicted by intentions. Starting a business can not be predicted by attitudes, beliefs, personalities or demographics. However, intentions are best predicted by certain attitudes. In other words, attitudes predict intentions which, in turn, predict behaviour, and further, only intentions directly affect behaviour, while attitudes affect intentions. (Ajzen 2001; Krueger & Carsrud, 1993). Figure 1 presents the basic intention-based process model.

In general, an attitude represents a summary evaluation of a psychological object. Further, one's own belief associates the object with a certain attribute, and the person's overall attitude toward an object is determined by the subjective values of the object's attributes in interaction with the strength of the associations. Only beliefs that are readily accessible in memory influence attitudes at any given moment (Ajzen, 2001). Thus, an attitude is a mentally prepared state for any known subject, and it is a subjective consciousness that is affected by the environment. The attitude toward entrepreneurship, in turn, is an individual's concept about entrepreneurship, assessment, and inclination towards entrepreneurial behaviour of self-employment. (Chen & Lai 2010, 3). All in all, attitudes are relevant for understanding and predicting people's social behaviour (Ajzen, 2001). This quantitative study aimed to find out the attitudes of business students towards entrepreneurship in a business

management programme in Finland. It is worth emphasising that the aim was not to examine their intention as a planned behaviour. Further, since the level of intention seems to be higher when the students have spent a long period of time in a foreign country (DeGeorge & Fayolle, 2008), the sample has been selected by including only international student groups in it. Further, the sample consisted of female and male students, and they represented different nationalities.

Figure 1: The basic intention-based process model (Krueger & Carsrud 1993, 317)



## RESEARCH QUESTIONS

The main objective of the study was to find out the attitudes of international students towards entrepreneurship. Based on the objective of this study, the research questions were formulated according to the findings of the previous studies as follows:

### Gender differences of entrepreneurial attitudes

Despite the increasing number of females who start their own businesses in the western countries, their number still lags behind that of male entrepreneurs (Ljunggren & Kolvereid 1996, 3; Verheul, van Stel & Thurik 2006, 151). The distinction between female and male entrepreneurship reflects the work-force in general. Traditional occupations for female entrepreneurs have been, for example, in hairdressing, and in the hotel and restaurant business. Nowadays female entrepreneurs act also in other fields, such as in training and consultancy. (Aaltio et al., 2008). In previous studies new female entrepreneurs have emphasized independence as a reason for starting up a new venture (Ljunggren & Kolvereid 1996; Carrier et al., 2008). Further, common reasons for women to start up a business are also the desire for self-fulfillment and the possibility of making profit. (Carrier et al., 2008).

According to the research findings of Verheul, van Stel & Thurik (1996) there is a positive effect of the life satisfaction on female entrepreneurship. They explained the fact that for women, it may be important that they feel confident about themselves and the environment before they decide to start a business.

According to several previous studies male students express higher interest for entrepreneurship and are more likely to start their own businesses. For example, in the findings of Urbano (2006) gender had a significant effect on the intention of starting up one's own company. Also the findings of Kundu and Rani (2008) demonstrated that gender and family background had significant effects on determining one's entrepreneurial attitude orientation in general. However, there are also a few studies which indicate that gender had no significant effect on intentions to start a business. In other words, female students are as

likely as male students to become entrepreneurs and set up their own businesses. (Shinnar et al., 2009).

Thus, based on these contradictory perspectives introduced above and in order to understand the gender differences in the selected context, the first research question was formulated as follows: **“How does gender influence the attitudes towards entrepreneurship?”**

### **Entrepreneurial characteristics, interest, motives and barriers**

There are several studies indicating many positive characteristics related to entrepreneurship and entrepreneurial behaviour. For example, Henry et al. (2003) have summarized the main focus of the previous psychological studies related to entrepreneurial characteristics between 1961 – 1998 as follows: need for achievement, need for power, need for affiliation, risk-taking propensity, internal locus of control, initiative/drive/enthusiasm, confidence, need for autonomy and independence, innovativeness, decision-making, communication abilities, commitment/determination, leadership, judgement, tolerance of ambiguity and uncertainty, a grip on reality, and vision. The findings of Chen and Lai (2010) indicated that the students' attitude toward entrepreneurship was affected by environmental cognition and personal traits, which indirectly effects attitudes toward entrepreneurship. Nevertheless, the need for achievement, locus of control and creative thinking were the most important characteristics for entrepreneurship. Ristimäki (2004) summarises the features and characteristics of a person behaving entrepreneurially as follows: being self-confident, persistent, creative, independent, flexible, energetic, dynamic, optimistic, and having an ability to take risks, need for achievement, uncertainty-bearing attitude, and sense of responsibility. He continues that the diversity of the features is large and some of them are related to personality, while some of them are related to learning and growth. Also Gibb (2005) argues that many entrepreneurial features and characteristics can be developed, yet some of them can also be regarded as in-born characteristics.

Nowadays more and more young highly educated people with formal management skills establish their own enterprises. They might lack work experience and therefore many realities of business life, yet often they are full of enthusiasm and motivation which are required particularly in many new industries. In fact, the key characteristics of successful entrepreneurs are related to the way in which they approach their tasks. The characteristics base on their commitment, interest and motivation. (Wickham, 1998). Motivation arouses, directs and maintains human behavior toward attaining some goal. According to the findings of numerous studies entrepreneurs seem to have higher achievement motivation than non-entrepreneurs. (Henry et al., 2003). In the findings of Urbano's study (2006) the most significant motives to become an entrepreneur among university students were related to personal independency and creating something for your own.

Based on the references presented above, and in order to understand entrepreneurial characteristics, interest, motives and barriers in the selected context, the second research question was formulated as follows: **“How are Entrepreneurial characteristics and Interest for one's own enterprise as well as Entrepreneurial motives and Barriers of entrepreneurship related to each other?”**

### **Entrepreneurial intention**

Entrepreneurial intention refers to the intention to start a new venture. The findings of Pihkala (2008) indicate that entrepreneurial intention of polytechnic (UAS) students seems to be constant during the studies. Further, although the studies of higher education increase

the awareness of entrepreneurship in general, they do not support and enhance the entrepreneurial intention. In fact, it seems that the conceptions of entrepreneurship became more negative during the studies, which does not support the entrepreneurial intention to set up one's own business. The variable of entrepreneurial intention for a study can be operationalized in different ways. For example, Urbano (2006) asked directly if a respondent had ever thought seriously of setting up or founding one's own company. He gave five-scale alternatives for answering (number 1 being "No, never" and number 5 being "Yes, I have a firm intention of setting up a company"). Further, Autio et al. (2001) used the statements in assessing the perceived likelihood of the individual to start a new firm, either on part-time or full-time basis, within one or five years from the time when the survey was carried out. The findings of Urbano (2006) indicated that if there were entrepreneurs among relatives, it had a significant effect on the intention of starting up one's own company. Also the findings of Degeorge & Fayolle (2008) support that the level of intention seems to be higher when there is an entrepreneur as a close relative, yet at the statistical level the relation was not significant in their results. To find out this relationship in the selected context, the third research question of the study was formulated as follows: **"How is the perceived entrepreneurial intention related to there being an entrepreneur in the core family or among acquaintances?"**

### **Stability of attitudes**

Strong attitudes are expected to be relatively resistant to change. Thus, despite some recent contradictory findings, strong attitudes are said to be relatively stable over time, to be resistant to persuasion, and to predict manifest behaviour. Further, high personal relevance of information on which an attitude is based increases its strength. (Ajzen, 2001). According to the findings of Degeorge and Fayolle (2008) entrepreneurial intention level seems to be a stable variable over a long period time. In other words, the academic year of the programme does not have influence on the variable, which was also supported by the findings of Shinnar et al. (2009). In addition, based on previous studies, it seems that when attitudes change, the new attitude overrides but does not replace the old attitude. According to this model of dual attitudes, a person can simultaneously hold two different attitudes toward a given object in the same context. Then, one attitude is implicit or habitual and the other one is explicit. (Ajzen, 2001). For example, according to the findings of Leskinen (1999) the changes of students' conceptions were relatively limited. However, negative attitudes were increased during the studies.

Finally, to find out the stability of the attitudes in the selected context, the fourth research question of the study was formulated as follows: **"How does the academic year influence on the attitudes towards entrepreneurship?** And further: **"How do the attitudes of the student groups change between the different academic years?"**

### **METHODOLOGY**

The study was conducted by using a questionnaire. It included 27 statements related to the four main themes to find out the students' attitudes towards entrepreneurship. The first theme was "Entrepreneurial features and characteristics" and it had nine variables of which some were related to personal traits and to some learnt abilities. The second theme was called "Entrepreneurial motives" and it had six variables. The third theme concerned "Interest for one's own enterprise" and it had four variables. Finally, the fourth theme was related to "Barriers of entrepreneurship" and it had eight variables. It is worth mentioning the following things about the questionnaire: all the 27 statements were in one list, not categorised according to the themes introduced above, and there were both positive and negative statements. Beside 27 statements (alternatives to answer were from 1 to 5), the



students were asked questions as background information, gender, academic year, and if there were entrepreneurs in their core family or in their acquaintances. Further, they were asked if they have thought about setting up their own business in the future, by giving five different alternatives to answer (see Table 1). However, it is worth mentioning that in this study entrepreneurial intention means the likelihood of starting a business in the near future (yet it does not refer to the intentional planned behavior, cf. Ajzen, 2001). The study was carried out in November - December 2009 and four different international student groups were selected in the sample (n = 106). The questionnaires were delivered to the students at the beginning of classes and the students were asked to answer the questions. The questionnaires were returned back as soon as they were answered by the students. In addition, two of the student groups had answered the same questionnaires in November 2008 already, therefore the development aspect of the attitudes was included in the study and the findings of the two groups (study group and reference group) were compared between the years 2008 and 2009 (see Table 1). In the study group, about 60% of the sample was female and 40% male students. They represented many different nationalities from all the continents. The group of international business students (IBC) was studying in Belgium as ERASMUS exchange students and they were from different European countries.

Table 1: Characteristics of the samples

<b>Sample in 2009 (n = 106):</b> <i>Variables</i>	<i>Categories</i>	<i>Number</i>	<i>%</i>
1. Academic year	First (BM1)	29	27.3%
	Second (BM2)	22	20.8%
	Third (BM3)	19	17.9%
	Third – Fourth (IBC)	36	34.0%
2. Gender	Male	42	40.0%
	Female	63	60.0%
	No answer	1	
3. Entrepreneurs in core family	Yes	58	55.8%
	No	46	44.2%
4. Entrepreneurs in acquaintances	Yes	72	68.6%
	No	33	31.4%
	No answer	1	
5. Entrepreneurial intention	Had not	8	7.7%
	Sometimes toyed with the idea and dreamed about it	61	58.7%
	Some plans already made	28	26.9%
	Already started a business or was a business owner	7	6.7%
	No answer	2	
<b>Sample (reference group)</b> <b>in 2008 (n = 58):</b>	1st academic year (is 2 <sup>nd</sup> in 2009)	39	67.2%
	2nd academic year (is 3 <sup>rd</sup> in 2009)	19	32.8%

The data analysis was made by using the SPSS-software. First, the frequencies, means and standard deviations were examined by each variable, and crosstabs were made. Then the means of the variables were combined as the combined variables according to the four themes introduced above. The correlation between the combined variables were examined and tested by using correlation analysis (Pearson) and the crosstabs by using Pearson Chi-Square tests. In addition, T-tests were used to test differences statistically between two student groups (Independent-Samples T-Test) and one-tailed variance analyses between several groups. Finally, the findings were reported according to the research questions of the study.

**FINDINGS**

**Gender differences of entrepreneurial attitudes**

The results for the gender differences of the attitudes are shown in Table 2. In comparison of the means of the variables, it seems that there are no big differences of the variables between male and female students. However, the differences were examined further and tested by using t-tests (Independent-Samples T-Test), and in six variables there were statistical differences between genders (see Table 2).

Table 2: Descriptive statistics of the means and T-tests by gender

Statements Note: the alternatives to answer were from 1 to 5, while 5 being correspond to the respondent's opinion very well	Male (n = 42) Mean / St.D	Female (n = 63) Mean / St.D	T-Test Sig. (2-tailed)
1. An entrepreneur holds an esteemed position in society	4.00 / 0.80	3.89 / 0.79	p = 0.482
2. An entrepreneur has the chance to be independent, his/her own master	4.33 / 0.85	4.29 / 0.77	p = 0.766
3. The entrepreneurial risk is not for me	2.17 / 0.93	2.52 / 1.06	p = 0.080
4. I like to work in changing circumstances	3.62 / 1.08	3.43 / 1.01	p = 0.360
5. It is no use becoming an entrepreneur without practical experience	3.32 / 1.35	3.83 / 1.14	<b>p = 0.042*</b>
6. You cannot educate yourself to entrepreneurship; it is a native talent or a trait learned at home	2.36 / 1.06	2.52 / 1.01	p = 0.419
7. An entrepreneur can affect his success with his own actions	4.45 / 0.67	4.27 / 0.83	p = 0.236
8. Entrepreneurship is interesting and challenging	4.51 / 0.71	4.24 / 0.80	p = 0.077
9. I would like to utilise my education in my own enterprise	4.29 / 0.74	3.63 / 1.20	<b>p = 0.002**</b>
10. My income level is better as an entrepreneur than in paid work	3.36 / 0.98	3.00 / 1.01	p = 0.078
11. Entrepreneurship takes all the time so there is not enough time left for the family or my own hobbies	3.12 / 0.99	3.29 / 1.02	p = 0.410
12. I cannot tolerate economic uncertainty	2.67 / 0.93	3.03 / 0.93	p = 0.052
13. As an entrepreneur I cannot develop myself enough	1.95 / 0.91	1.97 / 0.97	p = 0.093
14. As an entrepreneur the quality of life is better than if I would work in a paid job	3.36 / 1.10	2.78 / 0.94	<b>p = 0.005**</b>
15. My education does not support my becoming an entrepreneur	1.79 / 1.00	2.27 / 1.08	p = 0.023
16. Entrepreneurship just does not interest me	1.64 / 0.96	2.37 / 1.20	<b>p = 0.001***</b>
17. As an entrepreneur I have a chance to succeed	4.19 / 0.71	4.03 / 0.86	p = 0.323
18. I do not master the skills required in business	2.14 / 1.05	2.78 / 0.97	<b>p = 0.002**</b>
19. As an entrepreneur I could take responsibility for my work	4.50 / 0.74	4.32 / 0.78	p = 0.233
20. In my work I want to advance resolutely to the goals I have set	4.27 / 0.67	4.21 / 0.85	p = 0.694
21. I do not want to be responsible for the enterprise and its employees	1.88 / 0.95	2.30 / 1.24	p = 0.066
22. I would become an entrepreneur if a suitable opportunity would knock	4.43 / 0.80	3.79 / 0.94	<b>p = 0.001***</b>
23. An entrepreneur's life is nothing but toil	2.10 / 0.98	2.22 / 0.97	p = 0.516
24. If you work hard you can make it as an entrepreneur, too	4.02 / 1.20	3.79 / 1.11	p = 0.316
25. Being an entrepreneur, I could make independent decisions	4.40 / 0.70	4.16 / 0.70	p = 0.081
26. I want to work in a familiar and safe environment	3.57 / 0.97	3.71 / 1.18	p = 0.517
27. Entrepreneurs are usually doing quite well economically	3.38 / 1.06	3.26 / 0.90	p = 0.527

Significance limits: P < 0.001\*\*\*, P < 0.01\*\*, P < 0.05\*

First, the difference of the statement 5 "no use of becoming an entrepreneurs without practical experience" was almost statistically significant (p = 0.042). The attitudes regarding the utilisation of one's own education in his own enterprise had a significant difference (p =

0.002) between genders. Then, in the attitudes concerning the better quality of the life as an entrepreneur than in paid work there was a significant difference ( $p = 0.005$ ). In terms of interest, the difference was very significant ( $p = 0.001$ ) between the male and female students. The difference of the attitudes related to the mastery of the skills required in business was significant ( $p = 0.002$ ), and the difference of attitudes related to the statement of the "I would become an entrepreneur if a suitable opportunity would knock" was statistically very significant ( $p = 0.001$ ).

Then, the variables were combined according to the themes (introduced in the methodology section) as four combined variables (means of the means) and they were compared between male and female students (see Table 3). The differences were statistically tested (independent-Samples T-Test) and the findings showed that there were statistically almost significant differences between the genders in the combined variables 2 and 3: according to the findings male students had more motivational factors ( $p = 0.015$ ) as well as interest for their own entrepreneurship ( $p = 0.025$ ). In addition, the difference was significant ( $p = 0.025$ ) in the barriers of entrepreneurship: the male students had lower barriers of entrepreneurship than the female students.

Table 3: The combined variables by gender

	Male (n = 42)		Female (n = 63)		T-test Sig. (2-tailed)
	Mean	St.D.	Mean	St.D.	
1. Entrepreneurial features and characteristics	3.72	0.35	3.70	0.38	$p = 0.085$
2. Motivational factors for entrepreneurship	3.81	0.58	3.55	0.46	$p = \mathbf{0.015^*}$
3. Interest for one's own enterprise	3.71	0.44	3.51	0.46	$p = \mathbf{0.025^*}$
4. Barriers of entrepreneurship	2.31	0.55	2.65	0.54	$p = \mathbf{0.003^{**}}$

Significance limits:  $P < 0.01^{**}$ ,  $P < 0.05^*$

### **Entrepreneurial characteristics, interest, motives and barriers**

The combined variables related to Entrepreneurial characteristics, interest, motives and barriers were tested by using correlation analysis (Pearson). First, Entrepreneurial features and characteristics and Entrepreneurial motives had an almost significant correlation ( $r = 0.243$ ,  $p = 0.015$ ). Entrepreneurial features and characteristics and Interest for one's own enterprise had a very significant correlation ( $r = 0.322$ ,  $p = 0.001$ ) with each other. Then, there was also a significant correlation ( $r = 0.315$ ,  $p = 0.002$ ) between entrepreneurial features and characteristics and motivational factors for entrepreneurship. In addition, an almost negative correlation ( $r = -0.198$ ,  $p = 0.049$ ) existed between Motivational factors for entrepreneurship and Barriers of entrepreneurship. Two-tailed Pearson correlations between the four combined variables are introduced in Table 4.

### **Entrepreneurial intention**

Entrepreneurial intention was operationalised by giving four different alternatives to answer: No intention, Sometimes been in mind, Some plans already made, and Own business started already. The findings are presented together with the information of whether there is an entrepreneur in the core family or among the acquaintances of the respondent which were combined as one background (see Table 5). The findings illustrated that most of the students ( $n = 90$ ) had an entrepreneur in the core family or among the acquaintances. Nevertheless, the differences were examined further and tested by using Pearson Chi-Square tests variable, but no statistical differences were found.

Table 4: Correlations between the combined variables

		1. Entrepreneurial features and characteristics	2. Motivational factors for e-ship	3. Interest for one's own enterprise	4. Barriers of e-ship
1. Entrepreneurial features and characteristics	Pearson Correlation				
	Sig. (2-tailed)				
	N	105			
2. Motivational factors for entrepreneurship	Pearson Correlation	<b>0.243*</b>			
	Sig. (2-tailed)	0.015			
	N	100	101		
3. Interest for one's own enterprise	Pearson Correlation	<b>0.322**</b>	0.315**		
	Sig. (2-tailed)	0.001	0.002		
	N	103	99	104	
4. Barriers of entrepreneurship	Pearson Correlation	0.184	<b>-0.198*</b>	-0.123	
	Sig. (2-tailed)	0.063	0.049	0.218	
	N	103	99	102	104

Note: \*\*Correlation is significant at the 0.01 level (2-tailed), \*Correlation is significant at the level 0.05 (2-tailed).

Table 5: Intention to start own business

	An entrepreneur in the core family (parents or siblings) or among acquaintances (relatives or friends)		Count
	Yes	No	
No intention	7	1	8
Sometimes been in mind	51	10	61
Some plans already made	25	4	29
Own business started	7	0	7
Count	90	15	105

### Stability of attitudes

The findings related to the stability of attitudes are presented as combined variables in Table 6. Although the differences between the academic student groups were quite small, they were tested by using one-tailed variance analyses (ANOVA). Nevertheless, no statistically significant differences were found between the academic student groups.

Table 6: Combined variables by academic student groups

	BM1 (n = 29)	St.Dev	BM2 (n = 22)	St.Dev	BM3 (n = 19)	St.Dev	IBC34 (n = 36)	St.Dev	ANOVA Sig.
1. Entrepreneurial features and characteristics	3.70	0.374	3.78	0.502	3.58	0.353	3.73	0.250	p = 0.296
2. Motivational factors for entrepreneurship	3.76	0.489	3.61	0.675	3.50	0.535	3.68	0.438	p = 0.617
3. Interest for one's own enterprise	3.59	0.455	3.46	0.424	3.65	0.394	3.62	0.505	p = 0.335
4. Barriers of entrepreneurship	2.43	0.527	2.7	0.681	2.38	0.504	2.53	0.529	p = 0.142

Next, the development of the attitudes of two student groups between the years 2008 and 2009 is introduced. In order to understand the development in detail, the development of

the attitudes is introduced by the groups: Group A refers to a student group which started their studies in the autumn 2008 and group B refers to a student group which started their studies in the autumn 2007. In other words, the development of the attitudes demonstrates the development of the attitudes during the first and the second academic years as well as the development during the second and the third academic years (see Table 7).

Table 7: Development of the attitudes during two academic years

	BM1 (group A) in 2008	St.Dev	BM2 (group A) in 2009	St.Dev	BM2 (group B) in 2008	St.Dev	BM3 (group B) in 2009	St.Dev
1. Entrepreneurial features and characteristics	3.77	0.34	3.78	0.50	3.68	0.37	3.58	0.35
2. Motivational factors for entrepreneurship	3.63	0.65	3.61	0.68	3.43	0.41	3.50	0.54
3. Interest for one's own enterprise	3.65	0.46	3.46	0.42	3.66	0.31	3.65	0.39
4. Barriers of entrepreneurship	2.34	0.54	2.70	0.68	2.46	0.62	2.38	0.50

Finally, the findings were also tested: first as the separate study groups A and B between the academic years, then together as one group between the academic years. However, no statistical differences were found. Nevertheless, it is worth mentioning two things related to the findings: first, there is a small change of attitudes in all variables between the first and the second year (the means of three first variables decreased and the mean of the barriers of entrepreneurship increased). Secondly, there was also a small change in the findings between the second and the third academic year, yet in a different way from the first and the second academic years. In terms of Entrepreneurial features and characteristics the means decreased, the means of Motivational factors for entrepreneurship increased, Interest for one's own entrepreneurship remained the same, and Barriers of entrepreneurship decreased to some extent. Although there were no statistical differences, however the findings might indicate the nature of the changes in the context.

## DISCUSSION

### The main findings of the study

In order to answer how the gender influences the attitudes towards entrepreneurship in the selected context, it can be summarised that the findings indicated that the male students did not have more entrepreneurial features than the female students. However, they have more motivational factors and interest for entrepreneurship than the female students, which supports Urbano's (2006) as well as Kundu and Rani's (2008) research results. In addition, the barriers of entrepreneurship are lower for the male students than for the female students. Based on the findings it can be concluded that the entrepreneurial features and characteristics are positively related to the interest for one's own enterprise as well as the entrepreneurial motives. In addition, motivational factors for entrepreneurship are negatively related to the barriers of entrepreneurship. The findings illustrated that even if there was an entrepreneur in the core family or among acquaintances, it had no statistically significant influence on the perceived entrepreneurial intention of the international students (cf. Urbano 2006; Degeorge & Fayolle 2008). Further, in order to summarise the findings related to the development of attitudes, it seems that they do not differ between the academic study

groups or between the study years, but remain almost the same. This supports also the theory that strong attitudes are expected to be relatively stable over time (Ajzen, 2001).

### **Limitations of the study**

The findings of this study improved the understanding of international business students' attitudes. However, there are limitations of the study which should be taken into consideration. First, the size of the sample was rather limited; therefore the findings should be generalized carefully. Another limitation of the study is related to the development aspect: in order to understand the stability or potential changes of the attitudes better, the development of the attitudes should be followed longer, from the beginning of the studies to the graduation of the students in order to have a better understanding of the development.

Thus, although the findings helped to answer the research questions, many other questions remain, and it provides possibilities for further studies. For example, a longitudinal study covering several international business programmes both in Finland and in other countries might be useful in understanding and explaining the topic. In addition, a follow up study for the graduates would better reveal both the attitudes and intentions of the students a couple of years after the graduation. It might also be worth to examine the attitudes and intentions of those students who have really started their own business during the studies or just after their graduation.

### **Implications and conclusions**

The findings can be pondered and conclusions can be drawn from the point of view of the students and teachers, but also from the point of view of society in general. First of all, in terms of scientific contribution, it can be concluded that the findings support quite well many previous studies related to attitudes and entrepreneurial intention. The findings of this study revealed the attitudes and entrepreneurial intention of international students. Further, since attitudes affect and predict intentions which, in turn, predict behaviour (Ajzen, 2001; Krueger & Carsrud, 1993), it can be concluded that the findings indicated that the entrepreneurial attitudes of the international business students are quite positive. It means that they might have a real intention for setting up their own businesses later. It could be taken into consideration and supported during their studies.

However, based on the previous studies as well as the findings of this study, the attitudes seem to be rather stable during the studies in higher education, which can be concluded in two different ways: depending on the aims of entrepreneurship education in an university, the attitudes could be taken more into consideration while selecting students carefully for entrepreneurship training, based on their attitudes towards entrepreneurship, and provide the training especially for them. On the other hand, if the aim is to increase the more effort could be put on the promotion of all the dimensions of entrepreneurship before and during the studies in higher education.

In general, although the attitudes seem to remain stable during the studies in higher education, the level of them is what accounts. In fact, in order to influence the attitudes, the promotion activities should be taken up much earlier by the society through up-bringing and basic studies. All in all, how to affect and promote entrepreneurial attitudes is still a big practical challenge both for the education and also for the business life.

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## THE IMPACT OF THE INCUBATORS' ROLE ON THE FIRM'S DEVELOPMENT IN THE BIOTECHNOLOGICAL SECTOR. AN EMPIRICAL ANALYSIS OF THE PIEDMONT REALITY

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### Abstract

The development of the innovative activities in Italy is characterized by a limited presence of start up, if compared to what has been happening abroad. This fact, combined to the strong European request of reducing the entrepreneurial risk and the major attention to what is called "life science", has started off biotechnological clusters. Moreover, in these latest years, the tendency has been to promote the international relations to favor the territorial technological development.

The aim of our empirical research is to analyze the structure of the Turin (Piedmont Region) biotechnological cluster, in which the ideas' and firms' Incubators have a decisive role in terms of start up's promotion, raise, development and technological and knowledge transfer between the academic reality and the entrepreneurial one. Besides, we also want to analyze

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how the Incubators can be fundamental in order to attract capitals, both private funds and public ones.

Keywords: Biotechnological cluster; Incubators; Innovative activities; Start up

Topics: Industry and area specific studies; Technology and innovation management; Natural sciences and business

## **INTRODUCTION**

*"Biotechnology is the application of scientific and engineering principles to the processing of materials by biological agents to provide goods and services"* (OECD, 2003).

Biotechnological companies arose in the '80s with the aim of capitalizing on their biotechnological discoveries in the pharmaceutical field. Fundamental forces shaping the biotechnology industry in the first decade of the 21st century include (Ahn, Meeks, 2008): 1) the gap between the low cost of creating a biotech company and the high costs for the pharmaceutical companies of converting novel technologies into approved drugs; 2) a steady evolution of the perception of value by investors in the biopharmaceutical industry value chain; 3) the irregular nature of the biotechnology financial markets resulting in increased operating risk and uncertainty; and 4) demand by multinational pharmaceutical companies for a product pipeline to insure against their own declining productivity and growing market penetration by generics.

The biotechnological companies are, on average, smaller than the pharmaceutical ones, and they have made the latter's position more fragile in the drug discovery phase (that is, in the first phase of research). Nevertheless, biotechnological companies are weak at the commercial distribution level.

## **THE STRUCTURE OF THE TURIN BIOTECHNOLOGICAL CLUSTER**

In field of biotechnology, 75% of Italian firms born on solid scientific base like start up of researchers or academic spin off. However more than half of those firms, after some years is not able to earn more than one million euro gross.

Even in Italy it is possible to find out territory with a strong interest for biotechnological development. It is possible to notice the presence of biotech clusters characterized by the presence of a biopark, private firms, public laboratories, incubators and attracting a strong interest in biotech research of public institutions, in addition to the one of private firms. The biotechnological research is so composed: bioinfo 4%; environmental 9%; agrifood 14%; health 73%.

In Italy, as in other European countries, innovative activities in biotechnology have lagged significantly behind the U.S.A. and proceeded along different lines. Structural weaknesses in the industrial base, in the research system, and at the institutional level have hindered the development of biotechnology. The most important difference is the virtual absence of the phenomenon of the specialized biotechnology start-ups, even as compared to other European countries (Orsenigo, 2001).

The concept of cluster can be traced back since to 1920 with the work of Marshall in 1920 on the English industrial regions of the 19th century, observing which focused on the creation of industrial districts. Even Porter (1998) states that: "Clusters are geographic concentrations of

interconnected companies and institutions in a particular field"<sup>4</sup>. More specifically, cluster initiatives are a particular form of public-private partnerships and are organized collaborations between public and private sector actors, such as firms, government agencies, and academic institutions, with for the purpose of enhancing the growth and competitiveness of clusters (Teigland, Lindqvist, 2005).

In the future biotech clusters are expected to move away from geographical regions and become more virtually based around diseases, pathways, markets and unique industry segments.

### **The biotech cluster: the raise and the business model.**

The Piedmont reality is characterized by the presence of the Turin biotechnological cluster. Its structure is organized in two principle areas: the University of Turin and the Bioindustry Park in Ivrea (in Turin province).

Inside the University of Turin there are the 2i3T Incubator and the Ideas' Incubator of the Molecular Biotechnology Center (MBC).

Bioindustry Park in the Canavese area is a scientific Park specialized in Life sciences, is the second one in terms of size and importance in Italy. It has been established near Ivrea, Turin county, and is operating since 1998 (Eporgen, 2009).

It has been created in the context of structural funds for the regional development managed by Piedmont Region which gave a total amount of 32 million of Euros for the infrastructures. The Bioindustry Park has been thought as a tool to the economic requalification of the territory and the its management is always involved in the international development; for example the park is involved in an international project called Bio Alps, born five years ago. The aim of this initiative is to cooperate managing complementary assets coming from Italy (Piedmont and Lombardy), France (Grenoble) and Genève. The first goal is the events' organization, the second one concerns the matching between firms and research centers and the third one is about the students' exchange.

Within the social whole are presents the following public organizations and private firms (The corporate is BiPCA corporation, with more than 8 million euro of capital. This society coordinate directly the realization of investments): Finpiemonte S.p.A; Provincia di Torino; Istituto di Ricerca Cesare Serono S.p.A.; Merck Serono – RBM; Telecom Italia SpA; Bioline Diagnostici srl; Confindustria Canavese; Confindustria Piemonte; Bracco Imaging; Camera di Commercio di Torino.

As wrote before the infrastructures have been financed by the Public sector and every year the Region gives funding to the biotech pole for specific projects about specific researches and what is called technology transfer; if 100 are the costs of the Bioinsutry Park, 50 usually come from the Region and the rest from the self – financing (25% from the facilities rent, 25% from consultant activities). The total amount of the 2009 revenues was 6 million Euros; moreover the Park doesn't receive funding in the profit and loss account and when the

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<sup>4</sup> Three kinds of advantages are also identified by Porter (1998): productivity advantages (reduction of transaction costs), innovation advantages (biotech clusters that mostly mainly arose near research centers of excellence in biotechnology-based disciplines), and new business advantages (the role of environment in the creation of new biotech companies). Prevezer and Stout (1998) identify other advantages concerning the demand side: input-output multipliers (strong local demand), hostelling (spatial competition), search costs, and information externalities (transfer of tacit knowledge between people working within a cluster. On the supply side, major advantages are: technology spillovers, specialized labor and, infrastructures.

Region or the Public Administration finances the park, it concerns a co-financing that means that the amount of the fund given by the public is about the 60%; the Bioindustry invests the remaining 40% (self-financing).

In details the Park offers to the recently established firms operating in high tech sectors a complete kit of services which facilitate the start up and spin off in the pre-start up phase (feasibility studies and selection of projects) in the start up phase (assistance in business planning, legal assistance, support in fund raising activities and/or partner research like venture capital or business angels) for the development (support in the start up phase, orientation and financial, legal, fiscal, technological and marketing assistance, in the 3-5 years of stay in the bio-incubator) and finally Way-Out (verify of results, orientation for the realization of a business plan of development, research of partner able to support the competitive development of the firm on the market).

Talking about startups, we have to consider Eporgen Venture which is the first Italian company, entirely funded by private, non-institutional investors, dedicated to seed capital investments in the area of life sciences. It was established in June 2004 with the aim of establishing and supporting the development of new enterprises operating in the life sciences field and born of highly innovative projects of international scientific importance. To date, Eporgen - this venture raises just private funds - has no less than 11 investments on its financial balance sheet, 10 of which are start-up companies and 1 pre-funded project that is ready to become a start-up company during the course of 2009. From 2005 Eporgen has been gathering more than 6 million of Euros.

#### **THE INCUBATORS' ROLE OF THE TURIN'S BIOTECHNOLOGICAL CLUSTER**

The incubators arise to offer means for favoring growth and the success of firms through a network of resources and support services for business activities; they make available the sites, basic logistical services, and the networks of personal contacts that form as a result of carrying out business activities in a single structure. The most well-equipped incubators also provide managerial services and technical, legal and tax consulting.

Nevertheless, incubators represent a temporary solution, since usually the authorization to carry out business activities in an incubator is year-to-year, and in any event limited to a maximum of 3-5 years. After the start-up phase the business, if successful, is transferred outside the incubator into an independent structure, thereby completing a process for the creation of new businesses, employment, and regional and national economic stimulus.

Many incubators were formed in Europe when, in 1984, the European Commission decided to favor measures aimed at developing business enterprises in member countries. These incubators were all of the BIC (Business Innovation Centre) type, with public capital, and aimed at providing local enterprises a set of basic services: spaces in which to operate, logistical infrastructures, communication channels, and opportunities for outside financing. Subsequently, the private capital and for-profit incubators began to spread.

Often the incubators are in scientific and technological parks; that is, geographic poles that enhance the advantages from the joint localization of firms and institutions such as universities, venture capitalist associations, etc., operating in high-tech and knowledge-based sectors.

The growth of start-ups is the result of the entrepreneurial spirit of one or more individuals with innovative ideas. Both in the U.S. and the European Union the founders generally come

from the university or public research sectors, on the one hand, or the laboratories of large enterprises on the other. We can thus speak of academic or industrial spin-offs.

As concerns the academic spin-offs, after the university in question has obtained approval from the competent authorities and the patents, it can license (though it is not bound by this) its intellectual property to start-ups that include its own researchers or former doctoral students, thereby acquiring royalties on the revenues or sales, or participating in the equity.

While industrial spin-offs can occur for different reasons, in general they are closely linked to the transference of research from the pharmaceutical companies to the biotechnological ones, or as a result of rationalization processes or merger and acquisition operations.

The 2i3T Incubator of the University of Turin is a company where the University, Provincia di Torino, Comune di Torino and FinPiemonte each owns 25% of the company's stock. The company capital amounts to 50.000 euro and it is entirely given.

The innovation poles are synergic coordination tools among different players of the innovative process, with the aim to make available high value added infrastructures and services and to interpret the technological demands of the enterprises to address the regional actions that support research and innovation. Focused on specific sectors, the poles will be constituted by groupings of enterprises, organisms of research and from a corporate body manager.

Fig. 1 - *Turin start ups sample*

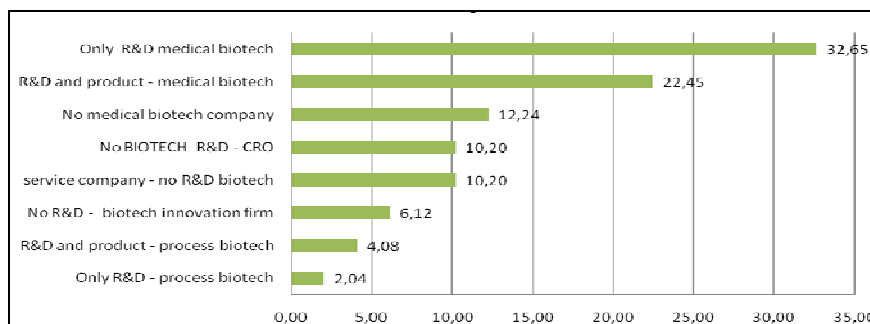


Fig. 2 - *Medical research – specific area*

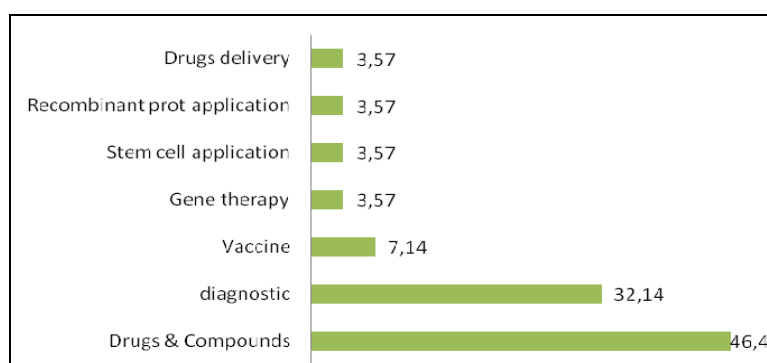


Fig. 3 - *Process technology – specific area*



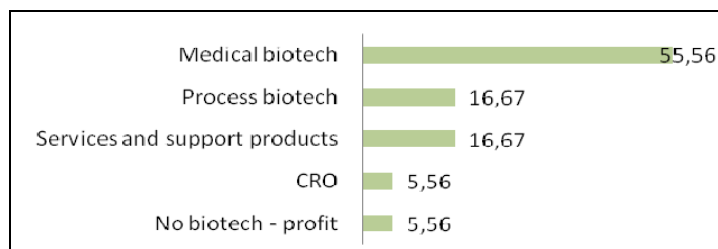
Sources: authors'elaboration

The incubator has shown its own interest into the poles of the *sustainable chemistry*, of the *biotechnology* and *biomedical*, of the *new materials* and of the *agrifood*, with the finality to propose itself as a subject bidder of technologies and know ledges, to promote the know how of the incubated enterprises and the university groups of research, particularly of those which pertain the available instrumentations into the incubator. The reality of the incubator doesn't have proper assets because these are of the university. In Turin there is also the ideas' incubator inside the Molecular Biotechnology Center of the University of Turin for specifically biotechnology research requested by external subjects or firms.

Unlike the Turin reality, in Ivrea we can find a facilities system called Discovery; this represents the second step of the biggest project realized into the Piedmont Region DOCUP 2000-2006 context and this is the incubator; this system of facilities offers 9 spaces equipped for the same number of startups operating in Life sciences, besides common equipping and areas.

The newly established startups companies can set themselves up within this incubator and thereby, during their first three years of life, enjoy the benefits of subsidized rentals, communal areas equipped with the most advanced instruments and privileged access to the technical and scientific skills of the Inter-disciplinary Advanced Methodology Laboratories (LIMA), in which the Bioindustry Park conducts its own proprietary projects and others on a contract basis, aimed at technology transfer. Furthermore, thanks to its network of international scientific and institutional contacts, the Bioindustry Park is able to provide the start-up companies with significant support in terms of sourcing and accessing public funding both within Italy and in Europe.

Fig. 4 - *Ivrea's start ups sample*



Sources: authors'elaboration

Fig. 5 - *Ivrea start ups*

Startups	activities
Apavadis Biotechnologies s.r.l.	Profit, just R&D of biotech process; proteomic anticancer
Bionucleon s.r.l.	Profit, just R&D biomedic product; drugs & compounds no specific therapeutic area
Biopaint s.r.l.	Altro per profit, no R&D biotech, environmental bioremediation
Creabilis Therapeutics s.p.a	Profit, R&D e commerce biomedic product, drugs & compounds, dermatologic
Dirivet Imaging	Altro per profit, no R&D biotech, services company
Ephoran Multi Imaging Solutions	Profit, just R&D biotech process; diagnostic no specific therapeutic area
Genovax s.r.l.	Profit, just R&D biomedic product; vaccine no specific therapeutic area
Natimab Therapeutics s.r.l.	Profit, R&D e commerce biomedic product, antibody no specific therapeutic area
NoToPharm s.r.l.	Profit, just R&D biomedic product; dignostici autoimmune disease
Spider Biotech s.r.l.	Profit, R&D and commerce biomedic product, drugs & compounds, anti infective
Target Heart Biotec s.r.l.	Profit, R&D e commerce di biomedic product, drugs & compounds, cardiovascular
Vanadis	no R&D biotech, services and support products
Narvalus s.r.l.	Profit, R&D commerce biotech process, cells colture cell no specific therapeutic area
Rotalactis	Profit, R&D commerce biomedic product, drugs & compounds, metabolic/foodstuff
Noraybio	no R&D biotech, services and support products
ProCellTech	no R&D biotech, CRO
Glyconova	Profit, R&D commerce biomedic product, drugs & compounds, anticancer

Sources: authors'elaboration

If we want to compare the Turin incubator 2i3T and the Ivrea one, we can say that the first one is a legal subject, the second one is an concept; this is a concept and not a project because the project usually has one begin and one end, the concept has one begin but has not end. Finally, the Ivrea incubator is a way to do, a behavior in which we can count the 11 Eporgen startups plus 4 or 5 others companies.

Talking about the Eporgen reality, it has been started as a Bioindustry Park initiative to help the startups' incubation; before the raise of Eporgen, there was a lack of private capital to invest in startups and the Park Board took the decision of creating an independent venture; a company which have the total amount of the corporation stock as private. Eporgen Venture is though as a tool to help startups raising and growing but only if they are driven by winning ideas. This approach has the main goal of avoiding what the Park Board calls "initiative's parasitism".

The Eporgen business model is a smart one; even if in the Piedmont Region territory we cannot find business angels specialized in biotechnology, we can find business angels in other sectors able to invest money in winning initiatives; so the Eporgen goal is to get them around a table for guarantee the biotech sector knowledge. The approach is not the business angels typical one because the investment which is proposed by Eporgen is the portfolio one; business angels will not invest in just one startup but in a startups' portfolio.

The choice of the portfolio startups was managed with an extreme selection through a two years national public job advertisement; the planning ideas was been garnered and selected thought a two step process (internal and external the Park) and this process has involved three venture capitalists and three industrial specialists coming from the Serono reality. A third step was based on another internal analysis and, after that, Eporgen was able to define the startups to incubate.

During the latest 10 years the Bioindustry Park has helped more than 30 companies to raise and to grow, gathering more or less 30 million Euros of equity and this is a great result if compared to the youth of the Ivrea biotech reality. Moreover, it is important to analyze that we are talking about funds given directly to the startups, not to the biotech park by which

today the Piedmont Region has seen the birth of a new sector (to remind: at the begin of the 21th century, there weren't biotech firms in this Region).

### **Incubators' promotion and the technology transfer.**

These incubators have a fundamental role on the firm's development in the biotechnological sector. In particular they promote the born and the development of the biotechnology start up in the Piedmont territory. Every incubator has own distinctive features that can be summarized as the following.

The incubator of the University of Turin 2i3T is place of aggregation of entrepreneurial activities that, thanks to its facility of contact and interchange consequential from the concentration in one unique center, it should offer an articulated and complementary set of services able to accelerate its development<sup>5</sup>. The 2i3T revenues refer to the charges for services provided for enterprises incubated in example for the use of scientific equipments and of laboratories. It can therefore result useful to plan a process of incubation of the enterprises articulated in the following phases: promotion, tutorial ex-ante the constitution, tutorial ex-ante the constitution, scouting, idea definition, business plan formation and development, the constitution of the enterprise, tutorial ex-post constitution, incubation in 2i3T and acceleration process.

The ideas' incubator inside the Molecular Biotechnology Center of the University of Turin has not a formal procedure for the incubation process. The subjects or firms that request the incubation pay a rent for the infrastructure, instrumentation and machinery.

As told before, the incubator Discovery is a concept and every promotion and technology transfer action is something the Bioindustry Park management has to think about; the international initiatives, the events and the students exchange programs are some examples.

### **The attracting capitals capability.**

A central role is taken by co-financing program of the public sector, contributing for more than 50% in favor of the smallest firms with national and regional programs. About Venture Capital, it is confirmed their scarce presence on national market. Finally, result almost absents even the so called Business angels.

Financing for biotechnological research can take the form of public financing, for-profit private financing, and non-profit private financing. Public financing can be direct or else take the form of company incubators.

Public financing for companies in the biotech field is distributed through various formulas based on the country in question.

Finally, as regards private financing, bank financing for unlisted companies is generally possible in the biotech sector only for those companies that can offer immaterial fixed assets as a guarantee. Other sources of private financing for unlisted firms are seed money in the form of business angels, venture capital, private equity funds, and corporate venturing. The 2i3T incubator and the startups receive regional and European funds for the development of their own activities.

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<sup>5</sup> Serrao G. in G. Büchi, C.A. Di Fazio, M. Pellicelli (a cura di), 2008, *Economia aziendale. Temi e metodi per le Facoltà scientifiche*, FrancoAngeli, Milano.



Also the future startups can participate to the "Start Cup Torino Piemonte"<sup>6</sup> competition that chooses the more innovative ideas and reward the best ones. Moreover this is a fundamentals moment for connecting the new ideas and the investors (business angels, seed capitalist, etc).

From the Ivrea pole side, the Eporgen system is a great one in raising times and this system is suffering the crisis situation; the Eporgen planning needed about 10 million of Euros but this funding not happened so in 2010 maybe some startups could be closed. Meanwhile Piemontech<sup>7</sup> has been involved in this system and has invested in two incubated startups.

Nevertheless there is a systemic problem which regards the venture capital; in Italy is difficult to find investors in life sciences sector and this is true not just for Italian investor, but also for foreign investors and this happens because the biotech in Italy is perceived as too risky unlike what has been happening abroad since years.

If we look at the France reality, for example, we can see that the Grenoble biotech cluster can count on three risk funding levels; a "pre-seed" level (50.000-100.000 Euros), a 10 million Euros fund, a 25 million Euros venture capitalists level. So Grenoble can count on more than 35 million Euros against the 6 million of the Bioindustry Park; there is the difference.

## **CONCLUSIONS**

The limit of our research has been represented by the difficulty in analyzing start ups' data – in particular the economics ones because the neo-entrepreneurs (often scientists at the first years of activity) have not developed the entrepreneurial mentality and they have many difficulties when they have to outline their own firms' economic trends. Despite this limit, we could understand as follows.

The Bioindustry Park and its incubator and 2i3T are so closed, that it's easy to think about synergies between the Ivrea pole and the University of Study of Turin. Actually some University Departments 'activities are placed on the Bioindustry Park ground, as some MBC research's groups and the focus is on the molecular imaging; what must be said is that those synergies are there because off some University full professors interests, so we are not talking about systematic behaviors.

However thanks to the bridge built between Ivrea and Turin, in the latest years a first molecular imaging center has been built in Ivrea. Through it the Ivrea reality makes the entrepreneurial competencies available and the University of Turin (with its Departments and the MBC) does the same with the academic ones.

This is, at the moment, the visible synergy; moreover the Bioindustry Park and 2i3T incubator are starting working together in some international initiatives and European projects, as the ESOF 2010, which is the biennial pan-European meeting dedicated to scientific research and innovation (planned for July 2010 in Turin).

Certainly the collaboration should be huger. The two realities don't work together on initiatives as the startups 'catching, neither on the ideas' selection, nor on the support services. Why? It seems due to the different cultures, different DNAs; in Ivrea we can smell

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<sup>6</sup> Start Cup is a an entrepreneurial project competition addressed to all those who have an innovative business ides. the focus is on the innovations which can bring new features to products, processes and businesses.

<sup>7</sup> The holding company promoted by the Torino Wireless Foundation, invests with risk capital in the most promising Piedmont-based companies in the following sectors: Information and Communications Technologies (ICT),Biotechnologies, Biomedics, Advanced Mechanics, Energy, innovative Services. Source: [www.piemontech.it](http://www.piemontech.it).

an entrepreneurial culture, while in Turin the culture is mastered by the university mentality. The only result is that they perceive each other as competitors in terms of funds and, more in general, money and this is the biggest systemic error which can represent an obstacle to the Piedmont international competitiveness.

Another difference we have to underline is the composition of the equity; when we talk about the Bioindustry Park we look at a model in which the Region and the Public Administration have the 70% of the share against the 30% owned by Merck Serono, Bracco and the other private firms.

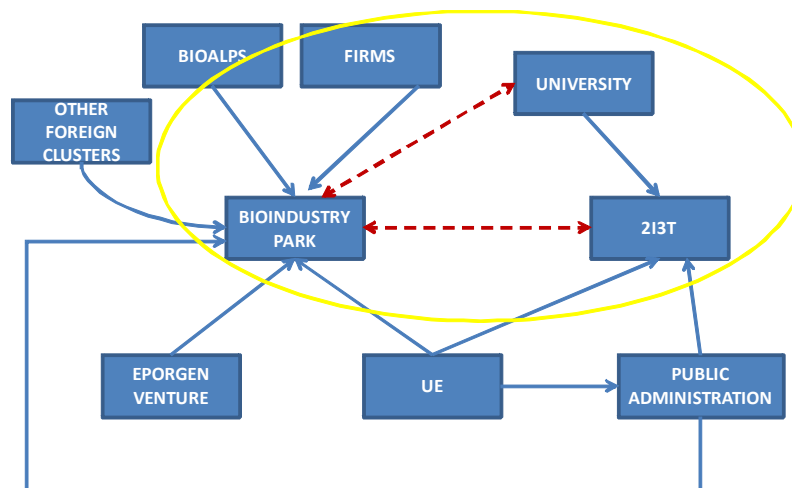
Although we have to consider that the Piedmont reality is one of the more fast growing; the Bioindustry Park is getting a benchmark for the other rising biotech Italian clusters (as the ones in other Italian Regions as Sicilia and in Puglia).

Finally we should consider some elements in order to improve the success of Piedmonts Incubators and biotech clusters.

Concerning our research, today the Bioindustry Park (in which we can find the Ivrea incubator) is the player with the major number of international relationships (as the Bio Alps can show); moreover is managed through a business model like what we can find abroad (for example in the Genopole bio cluster, France)<sup>8</sup>.

According to the model below, a huger collaboration between the BioindustryPark and 2i3t incubator (red dotted line in the model) should take international advantages, because the Ivrea pole's relationships would mean a huger international visibility for the Turin start ups which, at the moment, have few possibilities to be known by foreign investors and backers.

Fig.6 - *Synergies and relationships among the biotech sector's players*



Sources: authors' elaboration

We have to underline that in Italy there is a broad limitation for the development of the biotech young realities: investors don't pay attention to the innovative sector because they perceive it as too risky. A major synergy between Ivrea and Turin would create active networks for business angels or informal investors for an increase of very early stage high risk investment capital; this would mean profit not just for the single start ups, but for the

<sup>8</sup> To decide about the new start up, the bio park board evaluate the single cases using the BCG matrix; in this way it is possible to understand the research areas the territory mostly needs.

whole territory as well. Moreover, public and private financing mechanisms and other financial incentives are needed to attract private investors to invest in client firms in the incubation process and in the cluster's territory.

Eventually, thanks to a huger collaboration between the two realities, it would be easier the alignment between the entrepreneurship in one hand and the university research in the other hand. This alignment can be generated by building the tools for an everlasting communication among researchers (the University of Turin is one of the shareholders of the 2i3t) and the two analyzed poles' firms. This could be a very useful link because another huge limitation is represented by the lack of managers who have proper biotech skills, in one hand, and can manage corporate and business problems, in the other hand; a collaboration among university's researcher and entrepreneurs is fundamental because the incubators need to develop a multidisciplinary culture of staff to guarantee a support on the competences needed such as coaching, marketing, accounting and (if applicable) supervision, available for client firms.

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