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Firm performance: The role of CEOs' emotional and cognitive characteristics

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Abstract

Purpose – The paper examines the relationships between CEOs' personal traits, emotions, attitudes and tolerance of ambiguity; and subsequently, the influence of CEOs' ambiguity tolerance in firms' performance.

Design/methodology/approach – Survey data were collected from 256 ICT firms established in Greece. Their CEOs completed questionnaires examining TOA, personal traits, emotions and attitudes in the workplace. Principal components analysis and ordinary least-squares regressions were used to explore the hypotheses of the paper.

Findings – Three factors characterize CEOs' emotions, namely pleasure, dominance and arousal; two factors their involvement, namely importance and interest; and, respectively, one their emotional intelligence namely, empathy/handling relationships. Further, locus of control; importance; arousal; empathy/handling relationships and interest affect decisively CEOs' tolerance of ambiguity, which in turn, seems to influence positively firms' performance.

Research limitations/implications – Further research is required in Greek ICT industry regarding the influence of CEOs' emotional and cognitive attributes in organizations' financial performance. Likewise, this research should be expanded to other industries.

Originality/value – The originality of this study lies in the finding that emotional and cognitive characteristics affect CEOs' TOA, which, in turn, influences significantly firms' performance. Another significant contributing factor is that the study is carried out in Greece, where few studies have been conducted in this area.

Keywords: Ambiguity Tolerance, Attitudes, Emotions, Performance, Personal Traits

JEL Classification: D23, L25

1. Introduction

There is no doubt that the current business environment is one of the most challenging firms have ever faced. The downturn in the world economy and analogous increases in unemployment have resulted to lower consumer demand and tighter budgets. Given such dynamic environmental conditions, a firm's ability to adapt quickly is crucial to its success in achieving sustainable competitive advantage (Hitt et al., 1998). Further, it is acknowledged that CEOs' personal and cognitive attributes are key indicators of firm flexibility (Rajagopalan and Spreitzer, 1997) and firm performance (Nadkarni and Herrmann, 2010) especially during changing, complex and uncertain situations. Hence, in the current tumultuous business environment, CEOs' tolerance of ambiguity rises as a major skill able to facilitate organizations' change initiatives (Huber and Glick, 1995). However, although it is widely accepted that such individual-level emotional/cognitive factors (e.g. readiness to change, change receptivity, tolerance of ambiguity/uncertainty, openness to change) may enhance individual performance (e.g. Amenakis et al., 1993; Cunningham et al., 2002; McNabb and Sepic, 1995; Weber and Weber, 2001); there is a little consensus in the academic and practitioner literature whether such

factors can influence positively and directly firm performance.

In this respect, the main aim of this paper is firstly, to examine the influence of CEOs' personal traits, emotions and workplace attitudes in their tolerance of ambiguity; and secondly, to investigate the influence of CEOs' ambiguity tolerance in firms' performance. We chose CEOs because on the one hand, they are acknowledged as firms' major decision makers (Calori et al., 1994) and on the other hand, their personal characteristics are reflected to their firms' strategies (Hambrick and Mason, 1984). Moreover, empirical evidence suggest that characteristics of CEOs affect strategic decision processes (Peterson et al., 2003) and strategic actions that have implications for firm performance (Nadkarni and Narayanan, 2007). We tested our model in data on the CEOs of Greek ICT firms. The management style of Greek firms is rather centralized, authoritative and dominated mostly by one powerful individual (Bourantas and Papadakis, 1996; Morgan, 1994). Further, Greek ICT industry is an extremely important sector for the suffering Greek economy with extremely high change rates in terms of complexity, novelty and competition (EITO, 2011). Our results extend previous researches by highlighting how CEOs' personal and cognitive characteristics influence firm performance by either enhancing or

inhibiting their tolerance of ambiguity in a complex and dynamic industry context.

2. Theory Development and Hypotheses

2.1 Tolerance of ambiguity

Tolerance of ambiguity is generally defined as a range of reactions to stimuli that are considered unfamiliar, complex, uncertain, or subject to multiple interpretations (McLain, 1993). Further, Budner (1962) suggests that there are typically three types of ambiguous situations: *novelty* (completely new situations); *complexity* (excessively complex situations); and *insolubility* (opposing situations).

The way an individual interacts with ambiguous situations (e.g. perceive, interpret, react, adjust) ultimately defines one's tolerance of ambiguity level. As a result of multiple variables (e.g. perceptions, personality traits, emotions, values, attitudes), the ambiguity tolerance construct is complex (Benjamin et al., 1996). Nevertheless, ambiguity tolerance is a variable that is often examined on a unidimensional scale. A person with low ambiguity tolerance experiences stress, reacts prematurely, and avoids ambiguous stimuli. At the other extreme, a person with high ambiguity tolerance perceives ambiguous situations as desirable, challenging, interesting and accepts their complexity or

incongruity (Kirton, 1981). On the whole, literature suggests that tolerance of ambiguity plays a significant role in individual performance (Cook and Hunsaker, 2001).

Numerous attempts have been made to examine the relationship between tolerance for ambiguity and a number of personal, emotional, behavioral and working attitudes. Generally, tolerance of ambiguity is correlated with job satisfaction (Nicolaidis and Katsaros, 2011), organizational commitment (Judge et al., 1999), creativity (Tegano, 1990), decision making (Wilkinson, 2006), critical thinking (Facione et al., 1994), risk acceptance (Lauriola and Levin, 2001), and effective leadership (Lane and Klenke, 2004). Overall, managers with high ambiguity tolerance may exhibit higher performance in new situations by approaching organizational initiatives positively (Sawyer, 1990).

2.2 CEOs' personality traits, emotions, attitudes and tolerance of ambiguity

The CEO literature suggests that personal, emotional and psychological attributes of CEOs influence their strategic decisions (Hiller and Hmabrick, 2005). In more detail, they determine how intensively they will search for information, how they learn about external environmental and internal organizational evolutions, and which sources they rely on to obtain and

disseminate information (Miller and Toulouse, 1986). Nevertheless, all of our behaviour is somewhat shaped by our perceptions, personalities, emotions and experiences (Langton and Robbins, 2006).

Locus of control: It is a personal trait that refers to an individual's perception of the source of his or her fate (Langton and Robbins, 2006). Individuals with an internal locus of control (*internals*) believe that they control their destinies and thus, they are more likely to deal with a problem, once they come across it, during their effort to achieve a goal. On the other hand, individuals with an external locus of control (*externals*) believe that their lives are controlled by outside forces (e.g. luck, chance, destiny) and thus, they sense they have little control over their life (Rotter, 1975). A large amount of research has compared internals with externals. Internals exhibit greater performance when the work requires complex information processing, self-motivation, initiative, independent action and offers incentive reward for greater productivity (Miner, 1992). In contrast, externals tend to be less satisfied and involved in their jobs, more stressed and anxious (Benassi et al., 1988); and reluctant to take risks and work on self-improvement (Rotter, 1975). Within this context, Mamlin et al. (2001) suggest that generally top executives appear to be more internals. Overall, internally focused CEOs devote more effort to

environmental scanning by using a wide array of recourses (Finkelstein and Hambrick, 1996) and thus, they seem to be more flexible, adaptable and competent.

H1: CEO ambiguity tolerance is positively related to internal locus of control.

Emotional attitudes: Generally, no study of organizational behavior could be comprehensive without considering the role of emotions in workplace behavior (Langton and Robbins, 2006). Emotions are generally viewed as key mechanisms that preserve personal values in ambiguous situations and signal the need for change (Lazarus, 1991). In this respect, emotions may intermediate as an adaptive mechanism during change by empowering employees (Nicolaidis and Katsaros, 2010). Literature suggests that employees' emotions may affect the process of motivation and influence a number of performance and satisfaction variables such as, commitment, intention to quit and level of effort (Basch and Fisher, 2000). In more details, positive emotions in workplace may enhance inter-personal collaboration and flexibility (Fredrickson, 1998); facilitate employees to set higher and more challenging personal goals (Locke and Latham, 1990); and thus, increase the level of ambiguity tolerance (Nicolaidis and Katsaros, 2011). Authors indicate that almost all

emotions can be examined along a number of bipolar and independent dimensions. Literature suggests that the three prevailing dimensions are namely, *pleasure*, *arousal* and *dominance - level of uncertainty* (e.g. Russel and Mehrabian, 1974; Tiedens and Linton, 2001). *Pleasure* refers to a feeling that is felt to be different from preference, liking, positive reinforcement and approach avoidance (Bearden et al., 1993). Most important, it is associated with objectives' fulfillment (Lazarus, 1991) and may enhance individual's urge to think, explore and expand personal boundaries and creativity (Fredrickson, 1998). *Arousal* is a feeling state that varies along a single dimension from sleep to frantic (Bearden et al., 1993). As authors suggest, excessive arousal provoked by a high level of ambiguity may lead individuals to become reluctant to react (Liu and Perrewé, 2005) and initiate deterioration in cognitive performance (Kaufman, 1999). Thus, a moderate level of emotional arousal is likely to be associated with a high degree of ambiguity tolerance (Katsaros and Nicolaidis, 2012). *Dominance* refers to the extent to which one feels unrestricted or free to act in a variety of ways during complex and ambiguous situations (Bearden et al., 1993). It is positively related to job satisfaction, organizational commitment (Ashford and Bobko, 1989), trust and organizational leaders' credibility (Schweiger and Denisi,

1991). On the whole, the dominance factor is determined by the level of ambiguity that any complex change engulfs. The above analysis signifies that pleasure arousal and dominance may influence positively tolerance of ambiguity.

H2: CEO ambiguity tolerance is positively related to pleasure, arousal and dominance.

Emotional intelligence: Emotional intelligence (hereafter EI) refers to the ability of an individual to perceive, appraise, and express emotions; to access or generate feelings when they assist thinking; to understand emotions; and to adjust emotions to promote intellectual growth (Mayer and Salovey, 1997). Similarly, Goleman (1998a, p. 317) defines EI as "the capacity for recognizing our own feelings and those of others, for motivating ourselves, and for managing emotions well in ourselves and in our relationships" and suggests that it may influence work and organizational effectiveness. Further, research suggests that employees with high levels of EI are more adaptable to stressful events by employing better coping strategies (Bar-On, 2001); exhibit greater interpersonal and social skills relating to interacting with and influencing others (Mumford, Marks et al., 2000), and thus, may lead more effectively (Higgs and Rowland, 2002). Overall, given that change uncertainty is frequently associated with emotional conflict (Downing,

1997) and that emotions play an important role during complex situations (Walsh, 1995); it is proposed that EI can contribute positively to the effective management of change ambiguity (Cooper, 1997; Goleman, 1998b).

H3: CEO ambiguity tolerance is positively related to emotional intelligence.

Job Satisfaction: Job Satisfaction emphasizes on the task environment where an employee performs his/her work and the direct reactions to specific tangible aspects of the working environment (Mowday et al., 1982). It is mainly defined as the emotional and cognitive attitude held by an employee about different aspects of his/her work (Wong et al., 1998). More to the point, research has identified a positive relationship between job satisfaction and ambiguity tolerance (Judge et al., 1999) and suggests that job satisfaction plays a critical role in employees' acceptance of change ambiguity (Iverson, 1996; Lau and Woodman, 1995). Respectively, Wanberg and Banas' study (2000) showed that low levels of change ambiguity tolerance were associated with decreased job satisfaction and stronger intentions to quit. Overall, job satisfaction may facilitate management's flexibility, adaptability and readiness to change. Therefore, it constitutes a significantly affecting factor of tolerance of ambiguity.

H4: CEO ambiguity tolerance is positively related to job satisfaction.

Organizational commitment: It is mainly examined in terms of workers' identification with the organizational goals (May et al., 2002, p. 776), and in terms of attachment and loyalty (Armstrong, 2001, p. 171). Generally, organizational commitment is defined as the relative strength of an individual's identification with and involvement in a particular organization (Mowday et al., 1979, p. 226). There is evidence that organizational commitment plays an important role in employee's acceptance of ambiguity in the workplace (Cordery et al., 1993; Iverson, 1996). Relatively, Lau and Woodman (1995) argue that highly committed employees are more willing to accept organizational change ambiguity if it is perceived to be useful. That is, an individual committed to an organization accepts its values, is willing to exert effort on its behalf, and wishes to remain in the organization (Mowday et al., 1979). However, they note that a highly committed employee may resist to change ambiguity if he/she perceives it as a threat for his/her own benefit or harmful to the organization. Concluding, every organizational change requires management's commitment since management's role is considered pre-eminent, essential and/or fundamental (Lascelles and Dale, 1990; Savolainen, 1998).

H5: CEO ambiguity tolerance is positively related to organizational commitment.

Involvement: It is an attitude towards the work role and its context (The Blackwell Encyclopedia of Management). It is mainly defined as the employee's willingness to support the organization even if additional time and effort are required (Madsen et al., 2005). Literature suggests that employees' involvement is a key component of organizational commitment (Eby et al., 2000; Madsen et al., 2005); relates to their cognitive support during the change process (Oswald et al., 1994); may promote personal readiness for change (Armenakis et al., 1993) and thus, enhance tolerance of ambiguity. Scholars suggest that involvement can be examined along a number of bipolar dimensions that can be viewed as independent one from the other (e.g. Peter and Olson, 2002). Relevantly, McQuarrie and Munson (1991) support that involvement, can be examined by two prevailing bipolar dimensions namely, *importance* and *interest*. *Importance* refers to an important event, decision or problem that has a big effect or influence on people's lives or on future incidents (Longman Dictionary of Contemporary English, 2003). Relatively, Curren and Harich (1994) suggest that when individuals perceive an ambiguous situation as relatively important, they will transfer their own perceived feelings

to the relevant event (i.e. managers will exhibit high involvement towards a change initiative). *Interest* concerns the personal interest that a person has in an event. Relatively, when someone is interested in an ambiguous situation, he/she will exhibit greater commitment, identification and involvement during its evaluation (McQuarrie and Munson, 1991). The above analysis signifies that CEOs' involvement may facilitate ambiguous situations appraisal and tolerance.

H6: CEO ambiguity tolerance is positively related to importance and interest.

H7: The interaction of CEO s' demographical characteristics; personal locus of control; emotions of pleasure, arousal and dominance; emotional intelligence; attitudes of job satisfaction, organizational commitment, and involvement; affect their ambiguity tolerance.

2.3 CEO characteristics and firm performance

Firm performance is a complex issue in the organizational literature, given that it suffers from conceptual problems regarding its definition, validity and measurement (Murphy, 1996). Thus, any evaluation of firm's performance must focus on its operative goals. It should be also noted that the terms "effectiveness" and "performance" are used interchangeably because problems related to their definition, measurement and explanation are nearly identical (March and Sutton 1997).

According to the rational goal model, firm performance can be measured through quantitative data that reflect its profitability and efficiency (e.g. Kotter and Heskett, 1992). These measures are nonbiased and particularly helpful for single-industry studies because of the uniformity in measurement across all organizations (Venkatraman and Ramunujam, 1986). Further, researchers propose Return on Equity (ROE; Viverita, 2008), Return on Assets (ROA; Crosson et al., 2008), Net Profit Margin (Mueller, 1990); Efficiency Ratio (Needles et al., 2007) and Total Asset Turnover (Bodie et al., 2004) as common measures of firm performance. Overall, it should be noted that no single measure may fully clarify all aspects of the term (Doyle, 1994).

Within this context, quite a few studies have examined the relationship between individual characteristics and firm performance (e.g. age, education, experience, leadership practices, CEO personality; Fasci and Valdez, 1998; Frith, 1998; Ozcelik et al., 2008). Nevertheless, there is a little consensus about the influence of individual-level factors to organizational performance. Firstly, Argyris (1964) and McGregor (1960) proposed that the way employees experience their work would be reflected in organizational performance. In the same vein, others researchers propose that certain

individual-level factors (e.g. job satisfaction, commitment, motivation, citizenship behavior; Brewer and Selden, 2000; Kim, 2005), locus of control (De Brabander and Van Witteloostuijn, 1996), employee involvement (Jones and Kato, 2003) may positively affect organizational performance. Further, change management literature suggests that with the acceleration of globalization and environmental dynamism, readiness to change (e.g. individual's attitude towards change) have a positive effect on firms' financial (i.e., profitability, costs) and organizational (i.e., efficiency, productivity) outcomes (Goldhar and Lei 1995; Li et al., 2005; Rudd et al., 2007; Tan and Peng, 2003). Similarly, it is proposed that CEOs' personal and cognitive attributes is a key indicator of firm flexibility (Rajagopalan and Spreitzer, 1997) and performance (Nadkarni and Herrmann, 2010). Overall, re-searchers claim that CEOs with high ambiguity/uncertainty tolerance may exhibit higher performance in new and complex situations (Jonassen and Grabowski, 1993; Sawyer, 1990); and in parallel, that their performance is a major determinant of the success of an organization (Fiedler, 1996; Thorlindsson, 1987). Thus, the following hypothesis arises:

H8: CEO ambiguity tolerance influences positively firm performance

3. Methods

3.1 Setting

The economy of Greece is the 32nd largest in the world by nominal gross domestic product (GDP) and the 15th largest in the 27-member European Union (Eurostat, 2012). However, decades of unrestrained spending, cheap lending, extremely bureaucracy and corruption, and failure to implement necessary financial and structural changes; left Greece heavily exposed when the global economic crisis begun in 2008-2009 (€330 billion national debt, 144.9% of GDP, 2010; €420 billion national debt, 198.2% of GDP, estimation for 2012). Thus, on 2 May 2010, E.E. and the International Monetary Fund (IMF) agreed on a €110 billion loan for Greece, dependent on the implementation of harsh austerity measures. Further, in October 2011, E.E. leaders agreed on a second €130 billion bailout loan, conditional not only the implementation of another harsh austerity package, but also that all private creditors should agree to a restructure of the Greek debt, reducing the debt from a forecasted 198% of GDP in 2012 to only 120.5% of GDP by 2020. The second deal was approved by all parties in February 2012, and became activated one month later, after the last condition about a successful debt restructure of all Greek government bonds, had been met. Within this context, if Greece can manage to comply with all economic targets outlined in the

bailout plan, a full return to the private capital markets will be possible again in 2015.

Regarding, the Greek ICT industry, we can support that though it is still in its infancy compared to other EU countries, it plays a vital role in the Greek economy and exhibits relevant resistance to the Greek financial crisis. In more details, Greek ICT sector's turnover reached €11.09 billion in 2008, €10.40 billion in 2009 and €9.6 billion in 2010 respectively. However, Greece, among 138 countries, holds only the 64th position in the Networked Readiness Index (World Economic Forum, 2011). NRI index examines the conduciveness of national environments for ICT development and diffusion (i.e. broad business climate, regulatory aspects, human and hard infrastructure needed), the degree of preparation for and interest in using ICT in their daily activities and operations by the three main national stakeholders (i.e. individuals, business sector, and government), and the actual use of ICT by the above three stakeholders. Thus, Greece needs to reinforce their market environment (90th) and improve their stakeholders' overall readiness to use new technologies (91st), while increasingly moving ICT usage and diffusion to the center of the national agenda (108th). In any case, it should be noted that the intense financial and structural transformations in the Greek

economy; the upcoming technological changes (e.g. transition to all-digital networks, next generation networks); the emergence of new services [e.g. combination of broadband (wired or wireless), digitalization of media content, falling costs of producing digital content]; the changes in the current market structure (e.g. market developments and associated changes in industry structure, changing consumer and/or citizen engagement, globalisation of markets and regulation, national digital communications strategies; ICT Regulation Toolkit, 2011); can potentially cause intense uncertainty, great ambiguity, extreme insecurity, and painful organizational changes that may ultimately affect negatively Greek ICT firms' overall performance.

Finally, the international literature suggests that Greek culture is characterized by extremely high intolerance of uncertainty, ambiguity and complexity. Respectively, Hofstede (2001) research findings suggest, that within a sample of 56 nations, Greece has the highest uncertainty avoidance value (Greece: 112, nations mean average: 66,4). Uncertainty avoidance refers to a society's uncertainty and ambiguity tolerance; it ultimately refers to what extent its members feel either uncomfortable or comfortable in unstructured (unknown, surprising, different from usual) situations.

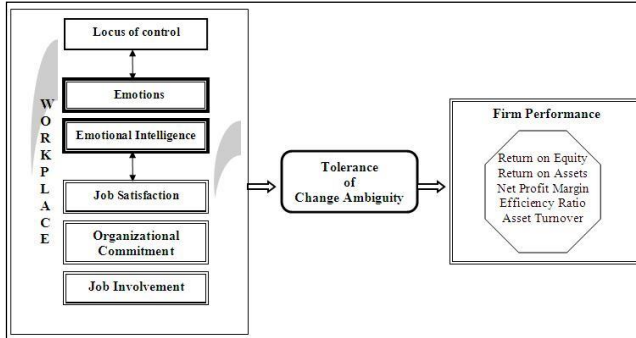
Uncertainty avoiding societies are routine-oriented; adapt with difficulty to novel social and environmental evolutions and changes; and are less innovative (Shane, 1995). Similarly, other researches also support that high uncertainty avoidance (Adamides et al., 2003; Nicolaidis, 1992) and ambiguity intolerance (Nicolaidis and Katsaros, 2011) characterize the culture of Greek firms in terms of risk evasion and change avoidance. In the same vein, according to the WVS Cultural Map of the World (Inglehart and Welzel, 2010), Greece has the 69th highest Traditional/Secular-rational value among 253 nations (Greece: 0,77, nations mean average: -0.14). Traditional/Secular-rational value characterizes societies that emphasize the importance of authority, absolute standards, traditional family values; and in parallel, they value economic and physical security above all.

3.2 Purpose and Methodology

Taking into consideration the international literature, the current financial crisis that provokes increased ambiguity/uncertainty, the "rigid" national and business culture (norms and values), the importance of the ICT industry to the Greek economy, and the few relevant studies in Greece; the purpose of the research was to examine how CEOs' personal traits, emotions and attitudes form their tolerance of ambiguity; and subsequently, the

influence of CEOs' ambiguity tolerance in firms' performance.

Figure 1: Research model



The research was conducted, in close cooperation with the Greek Information Technology Firms Association, the second semester of 2010. The sample for this study was drawn from 480 ICT firms established in Greece. Overall, 256 CEOs participated to the research (response rate 53,33%). The first month we organized a relevant workshop to explain the rationale and significance of the research, along with its goals, supporting objectives and expected results. The next two months, we conducted a pilot test to examine the research features and functionality. In parallel, for the purpose of our research we created a relevant web

page in order to receive data in electronic form. Consequently, we send a presentation of our research to all CEOs along with guidelines for the on line questionnaire. All through the research period, we provided full support (i.e. personal meetings, phone or e-mail) to the CEOs. In line with previous researches (e.g. Gullkvist, 2013; Hayashi, 2000; Katsaros et al., 2014; Tsirikas et al., 2012; Wooldridge, 2013), we used principal components analysis and ordinary least-squares regressions to explore the hypotheses of the paper. Table 1 summarizes the demographic characteristics of the participants in our research.

Table 1: Demographic characteristics of the sample

Managers			Firms		
	N	Frequencies %		N	Frequencies %
Sex			Region		
Male	190	74.2	East Macedonia/ Thrace	13	5.1
Female	66	25.8	Central Macedonia	102	39.8
Age			West Macedonia	5	2.0
18-24 years	9	3.5	Epirus	3	1.2
25-34 years	68	26.6	Thessaly	10	3.9
35-44 years	108	42.2	Ionian Islands	1	0.4
45 + years	71	27.7	West Greece	4	1.6
Marital Status			Central Greece	4	1.6
Married	173	67.6	Attica	89	34.8
Single	83	32.4	Peloponnese	3	1.2
Education			South Aegean	1	0.4
Secondary	20	7.80	Crete	4	1.6
University	131	51.2	Cyprus	16	6.3
Master	92	35.9	North Aegean	1	1.0
PhD	12	4.7	Age		
Other	1	0.4	1-5 years	50	19.5
Working experience (pr. position)			6- 10 years	50	19.5
1-5 years	90	35.3	11-15 years	62	24.3
6-10 years	68	26.7	16 + years	94	36.7
11+ years	97	38.0	Employees		
Total working experience			1-11	119	46.5
1-5 years	29	11.3	11-50	71	27.7
6-10 years	51	19.9	51-250	42	16.4
11+ years	176	68.8	250 +	24	9.4
Position			Firm life circle		
CEO	55	21.5	Initial	8	3.1
General Manager	39	15.2	Growth	149	58.2
Top-level Manager	162	64.3	Mature	87	34.0
			Decline	12	4.7
			Annual Turnover		
			€ <1 millions	113	44.1
			€ 1-10 millions	91	35.5
			€ 10-100 millions	33	12.9
			€ >100 millions	19	7.4

3.3 Measures

Regarding the tolerance of ambiguity measurement, we used the Tolerance-Intolerance of Ambiguity questionnaire developed by Budner (1962). The questionnaire includes 16 items and follows a scale from 0 to 100. A score between 44 and 48 is considered relevantly neutral, while scores below 44 indicate high tolerance to ambiguity and scores above 48 indicate a low one. Locus of control was examined through the well known questionnaire developed by Spector (1988). The questionnaire includes 16 semantic different items scored on a 1 to 6 scale. As far as the measurement of emotions in the workplace, we used the Dimensions of Emotions PAD questionnaire of Havlena and Holbrook (1986) (originally developed by Russel and Mehrabian, 1974). The PAD questionnaire is composed of 12 semantic different items scored on a +4 to -4 scale. There are three independent and bipolar dimensions namely, pleasure, arousal and dominance which evaluate emotional attitudes. Emotional Intelligence was examined through the "What's your emotional intelligence at work?" questionnaire (Cook and Hunsaker, 2001). The questionnaire includes 25 semantic different items scored on a 1 to 5 scale; and it captures five independent and bipolar dimensions that evaluate EI namely, self-awareness, managing emotions,

motivating oneself, empathy and handling relationships (Goleman, 1998a). For the measurement of job satisfaction, we used the 7-item scale Michigan Organizational Assessment Questionnaire developed by Cammann et al., (1979), which contains a three-item overall satisfaction subscale (Spector, 1997). Regarding the measurement of organizational commitment we used Organizational Commitment Questionnaire developed by Mowday et al., (1979) that is composed of 15 semantic different items, scored on a 1 to 7 scale. Finally, for the measurement of involvement, we used the McQuarrie and Munson's (1991) revised version of their Revised Personal Involvement Inventory (RPII). The questionnaire suggests that individual's involvement is based on the inherent needs, values and interests and it captures two independent and bipolar dimensions that appraise involvement namely, importance and interest (Bearden et al., 1993). Further, regarding the sample demographics and the control variables, we assessed three firms' (i.e. size, age, life circle) and three CEOs' (i.e. age, education, total working experience) characteristics respectively. Finally, firm performance was examined by five well established accounting-based measures namely, Return on Assets (ROA), Return on Equity (ROE), Net

Profit Margin, Efficiency Ratio and Total Asset Turnover (McDonald et al., 2008).

Table 2: Indicators of Organizational Effectiveness

Return on Equity (ROE)	Net Income/ Shareholder's Equity	It measures an organization's profitability by revealing how much profit a company generates with the money shareholders have invested.
Return on Assets (ROA)	Net Income/ Total Assets	It measures how profitable an organization is with respect to its total assets; how efficient management is at using its assets to generate earnings.
Net Profit Margin	Net Income/ Revenues	It measures how much out of every euro/dollar of sales an organization actually keeps in earnings.
Efficiency Ratio	Expenses/ Revenues	It measures expenses as a percentage of revenue and analyzes how well an organization uses its assets and liabilities internally.
Asset Turnover	Revenues/ Total Assets	It measures the amount of sales generated for every euro/dollar's worth of assets.

4. Analyses and results

We measure firms' performance using a three year average return (2008-2010) rather than a return for a specific year (2010). We believe this provides a better measure of their ongoing performance because it helps to reduce short-term

fluctuations due to temporary external and/or internal events. Firms' balance sheet analysis revealed the severe financial reality that ICT firms experience in the current turbulent Greek economic environment.

Table 3: Indicators of Organizational Effectiveness (2008-2010) – ICT industry

	ROE (%)	ROA (%)	Net Profit Margin (%)	Efficiency Ratio	Asset Turnover
Mean	31.85	6.195	1.73	0.94	1.11
SD	84.55	11.50	28.86	0.20	1.00
Min	-152.0	-25.33	-170.33	0.51	0.09
Max	422.66	56.33	41.66	1.97	5.55
Mean values (2008-2010)					

The descriptive statistical results revealed that the tolerance of ambiguity index value is equal to 58,05 (sd:8,27). Thus, they reveal CEOs' intolerance of uncertainty and ambiguity in their business environment. Further, their locus of control degree is 4,17 (sd:0,52); hence, they consider that the future depends

more on their own behaviour and actions, rather than luck or chance. Furthermore, CEOs' exhibit significant job satisfaction (mean: 5,85, sd: 0,85) and moderate organizational commitment (mean: 3,41, sd: 0,53). Table 4 summarizes the descriptive statistical results.

Table 4: Descriptive Statistical Results

Index	Mean	SD	Scale	Coefficient Alpha Reliabilities	Managers
Tolerance Of Ambiguity	58.05	8.27	100 - 0	0.81	Low ambiguity tolerance
Locus Of Control	4.17	0.52	1 - 6	0.78	Internal orientation
Job Satisfaction	5.85	0.85	1 - 7	0.77	Sufficiently satisfied
Organizational Commitment	3.71	0.53	1 - 7	0.79	Moderately committed

The first principal component analysis results revealed three factors that constitute CEOs' emotions in the workplace. The three factors have eigenvalues greater than 1 and

account for 70,70% of the total variance. These factors are (i) *pleasure* (variance 47,91%), (ii) *dominance* (variance 11,96%), and (iii) *arousal* (variance 10,83%). High reliability

also characterizes the three factors. The Cronbach coefficient alpha is 0,94, for the *pleasure* factor, 0,87 for the *dominance* factor and 0,67 for the *arousal* factor (moderate but acceptable level $\alpha > 0,6$ - see: Robinson et al., 1991; Kerlinger and Lee, 2000). On the whole, CEOs' emotions are vaguely positive. The factor of

pleasure, on a -4 to +4 scale, has a value equal to 0,79(sd:2,00); the factor of *dominance* has a value equal to 0,72 (sd:1,85); and the factor of *arousal* has a value equal to 1,24 (sd:1,30). Finally, the correlations among the three factors are in general medium to low degree ($0,420^{**} < r < 0,569^{**}$, $^{**}p < .01$).

Table 5: Emotions - Factor Analysis Results

Questions	I. Pleasure	II. Dominance	III. Arousal
EQ1	.903		
EQ2	.900		
EQ4	.847		
EQ3	.833		
EQ11		.864	
EQ12		.845	
EQ10		.784	
EQ9		.675	
EQ8			.689
EQ7			.678
EQ5			.632
EQ6			.595
Eigenvalue	5.749	1.436	1.299
% Variance	47.91	11.96	10.83
Cronbach α	0.942	0.868	0.667
Mean and SD	0.79+2.00	0.72+1.85	1.24+1.30

The second principal component analysis results revealed two factors that describe CEOs' job involvement: (i) *importance* (variance 43,17%), and (ii) *interest* (variance 18,33%). The two factors had eigenvalues greater than 1 and accounted for 61,50% of the total variance. Further, high reliability characterizes the two factors. The Cronbach coefficient alpha

is 0,82 for the *importance* factor and 0,83 for the *interest* factor. On the whole, CEOs' involvement factors are considerably positive. The factor of *importance*, on a 1 to 6 scale, has a value equal to 5,85 (sd:0,85) and the factor of *interest* has a value equal to 4,89 (sd:1,08). Finally, the correlations among the two factors are in general

medium to low degree ($r < 0,428^{**}$, $^{**}p < .01$).

Table 6: Involvement - Factor Analysis Results

Questions	I. Importance	II. Interest
IQ1	.826	
IQ2	.786	
IQ3	.771	
IQ6	.704	
IQ10	.653	
IQ7		.877
IQ8		.791
IQ4		.720
IQ5		.698
IQ9		.666
Eigenvalue	4.317	1.833
% Variance	43.17	18.33
Cronbach α	0.824	0.833
Mean and SD	5.85+0.85	4.89+1.08

Emotions - Factor Analysis Results. The third principal component analysis results revealed one mixed factor that describe CEOs' emotional intelligence, namely empathy/handling relationships (variance 25,83%; questions 20,15,14,25,19,24). The Cronbach coefficient alpha is 0,80 and the mean value, on a 1 to 5 scale, is equal to 3,85 (sd:0,62).

4.1 Hypothesis testing

We run ordinary least-squares (OLS) regressions in order to investigate the relationships between CEOs' personal traits, emotions, attitudes and tolerance of ambiguity (hereafter ToA); and subsequently, the influence of CEOs' ambiguity tolerance in firms' performance.

Locus of control emerged as significant predictor of ToA ($H1$). That is, CEOs with internal locus of control exhibit significant tolerance towards ambiguity in their working environment ($b = -3.325^{**}$, $p < .01$). Further, only one emotional dimension, the arousal factor emerged as a significant predictor of ToA ($H2$). CEOs with high level of arousal appear to have increased level of ambiguity tolerance in their working environment ($b = -0.894^*$, $p < .05$). Similarly, regarding CEOs' involvement, only the importance factor emerged as a significant predictor of ToA ($H5$). CEOs with high level of importance appear to have increased level of ambiguity

tolerance in their working environment ($b = -1.742^{**}$, $p < .01$).

In contrast, job satisfaction ($H3$), organizational commitment ($H4$) and emotional intelligence (i.e. empathy/handling relationships factor) ($H6$) didn't emerge as a significant predictors of CEOs' ToA.

Regarding the hypothesis 7, one personality trait (i.e. locus of control), one E.I. characteristic (i.e. empathy/handling relationships), two attitudes (i.e. importance and interest) and three demographical characteristics (i.e. education, total

working experience 6-10 and 11+) emerged as significant predictors of CEOs' ToA ($H7$). Hence, with respect to $H5$ and $H6$, the interaction of the above factors 'energizes' the empathy/handling relationships and interest factors, which in turn, seem to influence CEOs' ambiguity tolerance. Further, three demographic characteristics emerge as significant predictors of ToA. CEOs with total working experience more than 6 years and university education tend to have lower ToA.

Table 7: Regression Analysis Results (H1-7)

Variables	Dependent Var.: ToA						
	H1	H2	H3	H4	H5	H6	H7
(Constant)	71.931	55.328	56,520	59,159	68.245	59,159	75.816
Predictors							
Locus of Control	-3.325**						-3.383**
Pleasure		(-,116)					
Arousal		-.894*					
Dominance		(-,360)					
Job Satisfaction			,262				
Commitment				-,226			
Importance					-1.742**		-2.553**
Interest							1.399*
Empathy/handling relationships						,228	,376*
Controls							
Firm Size							(1.233)
Firm Age							(0.655)
Firm life circle							(1.598)
CEO Age							(2.653)
CEO Education - University							3.238*
CEO Education - (Master and Phd)							(-2.653)
CEO Total working experience 6-10							6.374**

CEO Total working experience 11+							6.953*
F	10.069**	4.442*	.160	.047	7.291**	1.607	2.110**
N	223	223	223	223	223	223	221
R ²	.043	.020	.001	0.00	.032	0.07	0.284
<i>Standard errors are in parentheses (significance levels: *p<.05, **p<.01)</i>							

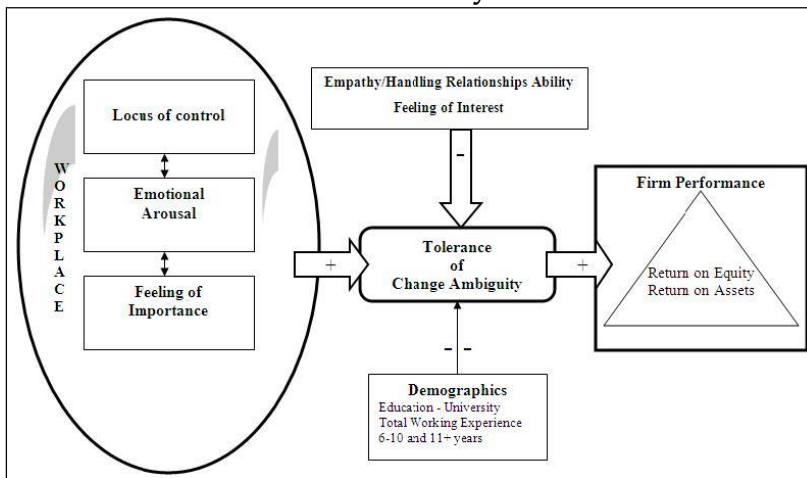
Finally, CEO ToA appears as a significant predictor of firm performance (ROE and ROA indicators; H8). Thus, CEOs with high level of ToA seem to be more efficient at using organizational equity and assets to generate earnings as well as to increase their firms' performance (ROE, b= -0.30*, p<.05*; ROA. b= -0.31**, p<.01**).

Table 8: Regression Analysis Results (H8)

	ToA				
Dependent Var.:	<i>H1</i>	<i>H2</i>	<i>H3</i>	<i>H4</i>	<i>H5</i>
(Constant)	58.616	59.553	57.754	48.043	59.340
RoE	-.300*	-.305**	(-.063)	(10.221)	(-1.538)
RoA					
Net Profit Margin					
Efficiency Ratio					
Asset Turnover					
F	4.526*	8.956**	2.185	2.655	1.549
N	221	221	221	221	221
R²	0.07	0.13	0.035	0.043	0.025
<i>Standard errors are in parentheses (significance levels: *p<.05, **p<.01)</i>					

Figure 2 illustrates the factors that affect CEOs' tolerance of ambiguity in the Greek ICT industry and in parallel, the influence of CEOs' ambiguity tolerance in firms' performance (ROA and ROE indicators).

Figure 2: CEOs' characteristics and firm performance in the Greek ICT industry



5. Conclusions and Suggestions for Further Research

The present research provides empirical evidence that CEO tolerance of ambiguity may influence positively firm performance (Return on Assets and Return on Equity). In the same vein, it is claimed that CEOs of Greek ICT firms have moderate to low tolerance of ambiguity (hereafter ToA) in their working environment (ToA=58,05; sd:8,27). As it was aforementioned, a possible cause may be the rather inflexible national and business culture (norms and values). However, taking into account the dynamic nature of ICT environment, we may assume that the interpretation of the results is unsatisfactory and disconcerting. Thus, Greek ICT firms should to try to increase their CEOs' ToA.

The research findings, likewise Mamlin et al. (2001) revealed that

CEOs have internal locus of control (hereafter ILoC) and also, a positive relationship between their ILoC and ToA. This provides further support to the international literature, which suggests that ILoC, may enhance performance in ambiguous situations (Begley and Boyd, 1987; Miner, 1992), flexibility and readiness to change (Benassi et al., 1988). Thus, with respect to Nicolaidis and Michalopoulos' (2004) study, we suggest that personal control (one of the five core dimensions of empowerment; Whetten and Cameron, 1995) may facilitate Greek banks administrations to increase their CEOs' ILoC. This could happen by applying a mix of the following three main practices: a) *fostering personal mastery experiences* that may help CEOs to master experience over ambiguous challenges, problems or difficulties, b) *providing resources* that

refers to technical and administrative support to CEOs, and c) *organizing teams* that refers to CEOs' participation in teams to accomplish things beyond their personal abilities (i.e. share information, knowledge diffusion, formulation and choice of solutions which they can either implement personally or in cooperation with others).

Further, statistical results indicate that the factor of importance is positively related to CEOs' ToA. Respectively, theoretical and empirical studies suggest that it is impossible to influence ones' perception or attitude if he/she considers it as relevantly unimportant (e.g. Curren and Harich, 1994; Hague and Flick, 1989). Consequently, we argue, that Greek ICT administrations should try to influence their CEOs' feeling of importance, by employing a collaboration/participation management style (Johnson and Scholes, 2002) that may a) enable CEOs to act as a bond between senior management and employees during ambiguous situations by playing a variety of roles (e.g. role model, mentor, translator, instigator, guardian; Floyd and Wooldrige, 1994), b) employ job enrichment practices to augment CEOs' work incentives, feelings of significance and ultimately, raise their responsibilities and their abilities to evaluate ambiguity in their working environment. (Hackman and

Oldman, 1980), and c) establish formal processes of involvement development (e.g. reassuring, giving feedback, reducing close supervision, provoking compatibility between their values and organizational goals; Whetten and Cameron, 1995).

The paper suggests that CEOs' tolerance of ambiguity can be further increased if their emotional arousal can be influenced. Consequently, according to the physiological and developmental theories of emotion, Greek ICT administrations should try to influence positively their CEOs' emotional experiences towards the change process by a) shortening the period of time they need in order to adjust emotionally and cognitively, b) controlling the level of their emotional arousal to a certain point, especially during the initial stages of change when extreme uncertainty is experienced, and c) facilitating them to comprehend the overall necessity of the proposed change (e.g. what if scenarios, current competition, early communication of intentions, future vision; Nicolaidis and Katsaros, 2011).

Additionally, our research has revealed a negative relationship between CEOs' ToA and their empathy/handling relationships skill in the workplace as well as, their interest. As literature suggests, highly committed employees with positive emotions towards their current jobs may face change ambiguity and uncertainty negatively if they

perceive them as a threat for their own benefit or harmful to the organization (Mowday et al., 1979; Vakola and Nikolaou, 2005). Consequently, we argue, that ICT firms should try to influence their CEOs' cognitive and emotional attitudes by delivering the right "message" to them (Armenakis et al., 1999). This "message" may address CEOs' tolerance of ambiguity by emphasizing on changes' necessity, suitability and effective outcomes for them and the whole organization; as well as by concurrently noting their continuous support to face it effectively.

Finally, certain aspects of the results presented here should be interpreted in light of their limitations. There are no such earlier studies in order to evaluate the research findings through time. Respectively, since the data were collected through the use of a single survey at a single point in time, the results may be influenced by temporal and/or distinctive and/or unique settings. Additionally, the fact that Greek CEOs were surveyed and that the research was conducted in a single country may to some extent limit the applicability of the results to other contexts. Nonetheless, it should be noted that further investigation needs to be conducted for the Greek ICT industry, by examining concurrently other important perceptual, emotional and attitudinal moderators (e.g. stress, risk-taking,

self-motivation, emotional intelligence, organizational citizenship, trust, self-efficacy, and readiness to change).

On the whole, this study has provided empirical evidence of a positive relationship between CEO tolerance of ambiguity and firm performance in Greek ICT industry. Further, the research findings confirm the importance of CEOs' perceptions, personality traits, emotions, attitudes and values in the workplace and they suggest that Greek ICT firms should focus on establishing positive, encouraging working climates and display greater concern for the role of their CEOs' emotional/cognitive characteristics during uncertain situations.

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