

THE IMPLEMENTATION OF GOFFEE AND JONES'S TYPES OF ORGANIZATIONAL CULTURE IN A GREEK STATE-OWNED ORGANIZATION THAT INTRODUCED NEW TECHNOLOGIES

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Abstract: Organizational culture plays a significant role in corporations. The introduction of new technologies creates significant changes and requires the contribution of an efficient organizational culture to produce positive results. The use of the various typologies of organizational culture can assist managers to identify the type of culture that is present in the organization and can provide useful guidelines on how to adapt to or change the existing culture, in order to make it more effective, particularly when introducing new technologies. Goffee and Jones (1996, 2003), based on the concepts of sociability and solidarity, proposed four types of culture: (a) networked, (b) mercenary, (c) communal, and (d) fragmented. This paper examines the development of these concepts and types of culture in a state-owned organization in Greece, following the organization's decision to introduce significant new technologies. This organization had a unique blend of characteristics. Quantitative research was conducted using a questionnaire compiled specifically for this case. Factor analysis was used for statistical analysis of the data. While the introduction of new technologies was successfully completed, the findings of this study highlight certain features of sociability and solidarity and the types of culture that contain them, which have contributed to the successful introduction and adoption of new technologies.

Keywords: new technologies introduction, Goffee and Jones types of organizational culture, public organization with specific characteristics.

1 Introduction

The introduction of new technologies generates changes and this needs the contribution of an efficient organizational culture (Goffee and Jones, 2003), as the latter significantly influences employee behaviour. Culture analysis is, therefore, an essential prerequisite to successful reform that comes from the introduction of innovations and new technologies (Ostrom and Hanson, 2009).

In the relevant literature, there are several theories that propose various generic types of organizational culture, allowing managers to identify the culture in their own organization and, if necessary, to try

to change it, in order to facilitate the introduction of new technologies.

This paper draws on the organizational culture conceptualization and framework proposed by Goffee and Jones (1996, 2003), which is useful for understanding and identifying the organization culture and is also relatively easy to apply to groups of employees, departments, or entire organizations. This typology can provide the guidelines for the introduction of a new culture, which may fit better under new conditions. Their theory focuses on two dimensions of human relations and their consequences for organizations: *sociability* and *solidarity*.

Based on them, Goffee and Jones propose four types of culture: networked, mercenary, communal, and

fragmented. Their theory was applied to a Greek state-owned organization, Olympic Airlines (OA), with particular characteristics, which are presented below in Section 3. OA's management, at some point in time, decided to introduce significant new technologies, new for the company, in order to respond to competition.

The new technologies introduced included a passenger service system, which included a reservation system and e-ticketing; a pricing system; a departure control system; a corporate website with Internet booking engine; a revenue management system; and a frequent flyer system (Olympic Airlines, 2006). These technologies, new to the airline, substantially assisted OA, as the organization's service provision process became more effective and efficient and the company saw immediate positive results (Malagas and Nikitakos, 2008). Throughout this study, the introduction of the new to the airline technologies is referred to as "the project."

The implementation of Goffee and Jones's (1996, 2003) types of culture in a state-owned organization provides useful conclusions and may point to the changes that the management of comparable organizations should make when introducing new technologies.

This paper is structured as follows: After introducing the case in this section, the relevant literature is reviewed in Section 2. The profile of the organization under study is presented in Section 3. The methodology used is described in Section 4 and the statistical results are provided in Section 5. Finally, the concluding remarks are presented in Section 6 along with recommendations for future research.

2 Literature review

Organizational culture contributes significantly to the successful introduction of new technologies and innovation, job satisfaction, and organizational success (Deal and Kennedy, 1982).

The international literature contains many definitions of the term "organizational culture." However, two perspectives dominate the relevant literature, which are not necessarily mutually exclusive: the managerial and social sciences approach. According to the

first, a leader or a management team creates and affects the culture, while the social sciences approach supports that culture is shaped by the shared experiences between individuals, often developed on an ad-hoc basis.

Based on the second approach, the intersection of the various definitions refers to the common characteristics, perceptions, values, beliefs, and fundamental principles that a group of employees follow, in order to adjust to new external environmental conditions and contribute to interorganizational integration and operation, and all these guide and constrain employees' behavior (Schein, 2004; Bourantas, 2007; Kondalkar, 2007).

Konteh, et al. (2008) stressed that culture constitutes a lens through which an organization can be understood and interpreted. Tan and Sun (2012) distinguish between formal and informal organization, both of which are linked to organizational culture.

Chapman (2002, p. 14) stressed that organizational culture is dynamic and "emerges in the complex interactions of human behavior" and is also structural, because of "such interactions produce particular patterns (or structures) which, in turn, influence the interactions themselves."

Ribière (2001) stressed that culture depicts the character or identity of an organization, on how things are done and is reflected by artefacts that someone sees when visiting a company, such as office spaces, the dressing code of employees, jargon used, etc.

Goffee and Jones (2009) pointed out that culture is simply a "community," which is built on shared interests and mutual obligations and thrives on cooperation and friendships.

Tan and Sun (2012) and Rizescu (2011) put forward that organizational culture is affected by long-term historical heritage, which becomes the "invisible hand," supporting management, influencing and restricting all its actions.

Ali, et al. (2008) and Leidner and Kayworth (2008) pointed out that the introduction and use of IT is influenced by national cultures, organizational culture, and the cultures of different groups of employees, while at the same time, a trend indicates that the adoption and use of the new technologies may re-

quire and shape specific employees' behaviors and affect the culture itself.

Organizational culture guides employees' behavior toward operational effectiveness (Schein, 2004; Ostrom and Hanson, 2009) and particularly to an organization's performance (Denison, 1990; Kotter and Heskett, 1992; Alvesson, 2002; Mannion, et al., 2009).

Some authors, however, including Scott, et al. (2003), have pointed out that there is little evidence in the research literature on the relationship between organizational culture and performance. However, leaders should develop a clear understanding of organizational culture (Reigle, 2001), as this is important for guiding the operation of the whole organization, in order to know its strengths and weaknesses and to use them appropriately. In addition, they should uncover the probable causal relationships between the different kinds of cultures and organizational performance and then implement this most suited to their needs (Alvesson, 2002).

In general, organizations comprise of a number of various cultures – the dominant culture and many subcultures (Greenberg and Baron, 2008) – and these cultures can be competitive with each other. Bate (1994) supports uni-culture: only a single culture existing within an organization, which can be influenced and controlled by management. Carnal (2007) and Alvesson (2002) stressed that the different cultures that exist in an organization derive from various groups of employees, who have their own ideas, explanations, and values that are influenced by the external environment.

Also, various subcultures may develop for numerous reasons, perhaps due to the nature of various functions that exist in an organization (sales, marketing, operational, financial) or to ethnic or geographical differences among employees (Sadri and Lees, 2001). The various subcultures that cannot easily be manipulated by management may change as the relationships between employees are not stable. The dominant culture, which is not necessarily agreed upon and followed by all members, must be stronger than the subcultures and its values must be in line with the values of each of the subcultures and the personal values of each individual (Sadri and Lees, 2001). In case of conflict between them, this may

lead to the detriment of the dominant culture, hindering management efforts and performance (Stakes, 2010).

The role of leadership is important in shaping an appropriate culture, affecting its main characteristics, such as attitudes to risk, rituals, and autonomy that respond to their organizations' needs (Stakes, 2010). Thus, top management needs to understand the culture of their organization or enterprise and must then decide how this can be changed in order to improve both their employees' experience of the workplace and their organization's profitability, despite this being a complicated task (Parmelli, et al., 2001; Sadri and Lees, 2001). Many challenges must be overcome in order to implement and sustain beneficial cultural change (Konteh, et al., 2008). The relevant literature shows that there are a number of standard steps and appropriate values that managers can follow in order to achieve an efficient organizational cultural change (Kotter, 1996; Carnal, 2007).

According to Hoffman and Klepper (2000), "organizational culture is amorphous, difficult to measure and quantify." However, the literature contains various theories that group together organizational behaviors and suggest certain generic types of organizational culture. These can be a useful tool for anyone interested in identifying and changing the culture of a group of employees, a department, or an entire organization and shape it accordingly. In particular, the categorization of cultures assist managers to better understand the pros and cons of every culture, monitor the developed dynamics of employees and dominant groups, find areas for improvement, recruit most suitable applicants, and determine what cultural changes are necessary in order to find the right culture for their cases (Stakes, 2010).

The competing values framework was initially proposed by Quinn and Rohrbaugh (1981, 1993) and is based on two bipolar dimensions: (1) internal focus (integration and uniformity) versus external focus (differentiation and competition) and (2) stability (order and control) versus flexibility and change. Based on these dimensions, Cameron and Quinn (1999) proposed four types of culture. Marchard, et al. (2013) classified leaders' behaviors based on different types of culture. Different types of cul-

ture based on employee attitudes and roles and on performance were also proposed by Handy (1981) and Sonnenfeld (1988).

Using the main characteristics of organizational culture that are included in the various definitions, Goffee and Jones (1996, 2003) suggested another categorization of culture based on two types of human relations, sociability, and solidarity, and their consequences for organizations. This is the theory used in the present study. Sociability and solidarity each have a high and a low side. Sociability includes the genuine friendships between the members of a society, which can exist both within and beyond their working lives. Members work together and cooperate in a cordial fashion. In environments with *high sociability*, individuals are more likely to go beyond the formal requirements of their jobs. They work harder than is technically necessary to help their colleagues – that is, their community – look good and succeed. In environments with *low sociability*, employees are interested primarily in their own benefit and less in what is good for the organization. There is high tolerance for poor performance, in the name of friendship or saving face, and cliques and workplace politics dominate.

Solidarity includes the desire of employees to pursue common objectives quickly and efficiently. In *high solidarity*, emphasis is placed on dealing with competitors for the benefit of the organization and its shareholders. On the other hand, in environments with *low solidarity* employees do not care about their colleagues and exhibit high levels of internal conflict or inadequate self-interest. High focus on targets can result in employees experiencing increased feelings of pressure and difficulty. Furthermore, in low-solidarity environments, there are groups of employees who pursue their personal targets, and there is confusion and lack of focus regarding business objectives.

The combination of sociability and solidarity generates four types of culture – networked, fragmented, communal, and mercenary, each of which has specific characteristics, advantages, and pitfalls. On the positive side, the behavior developed by employees contributes to the benefit of the organization, while on the negative side, employee behavior goes against the interest of the organization. These four distinct

types of culture proposed by Goffee and Jones (1996, 2003) are briefly described below.

2.1 Networked culture (high sociability and low solidarity)

- The positive networked culture

This culture facilitates teamwork, networking, and the development of high synergies, the existence of reciprocity and unofficial relationships, the creation and circulation of ideas and information, the acceptance of new ideas, improvement of employee morale, creative critique, innovative initiatives without the fear of failure, and high employee commitment, primarily to their colleagues rather than the organization.

- The negative networked culture

High tolerance of poor performance among employees can create significant problems for high performers, who feel they are not treated appropriately and begin to also exhibit lower performance before eventually leaving the organization. Additionally, the emergence of politicking and cliques drives employees to risk avoidance and slow decision making. Information circulation takes place selectively. Increased focus on procedures versus optimistic commercial and financial objectives can lead to delays, while, at the same time, competitors may act quickly. In this culture, the company vision is inward-looking.

- Leadership of the networked culture

Employees of organizations with a networked culture are guided by leaders with high interpersonal skills, who can identify key employees, place the right preferences, can resolve conflicts, and follow complex motivational models. Leaders of negative networked cultures are interested in their personal benefit, exploiting the cliques that exist around them.

2.2 Mercenary culture (low sociability and high solidarity)

- The positive mercenary culture

In environments with this type of culture, the following are observed: improved coordination; agreement on targets; eagerness to complete tasks quickly; immediate resolution of conflicts and risks in order

to avoid further problems; lack of extended discussion; constructive evaluation of all employee ideas; organizations are outward-looking (markets, competitors) and react quickly, especially when a competitor appears; organizational structures are flat; organizational change is supported; the provision of incentives is based on meritocracy; great emphasis is placed on minimizing costs in order to improve financial results; there is a lack of out-of-the-box thinking; and, finally, these organizations present low creativity and learning, due to low tolerance of poor performance and failure among employees. Thus, this type of culture is ideal for the management of existing knowledge.

- The negative mercenary culture

High focus on short-term financial performance leads to lack of communication between groups, departments, and functions. The *silo phenomenon*, where employees work alone and in parallel, can be observed in this type of culture.

- Leadership in the mercenary culture

The negative signals of this culture can be decreased and leaders must remind employees of the common vision and the organization's enemies. Leaders set optimistic objectives and achieve highly ranked targets, but they are also tough and create the right competitive atmosphere between employees. On the other hand, leaders in a negative mercenary culture pursue their personal objectives, which differ from those of organization.

Organizations that exhibit high solidarity and at least some sociability are expected to achieve positive results.

2.3 Fragmented culture (low sociability and low solidarity)

- The positive fragmented culture

The main characteristic of this culture is the presence of autonomous employees, who work for their own benefit and enjoy increased autonomy, privacy, and flexibility compared to employees in other types of culture. Employees are more loyal to their professional group than to their organizations. They are judged by their productivity, the quality of their work, and their reputation. In such environments, there is a lack of common creativity. This type

of culture is observed in newspapers, universities, and law offices.

- The negative fragmented culture

This type of culture is the most dangerous of these culture types. Employees resist ideas that come from others and work to depreciate their organization. Those who distinguish themselves are subject to intense criticism.

- Leadership in the fragmented culture

Leaders in this type of culture should coordinate their organization members and remind them of the common objectives, establish a control system, and encourage the development of at least a minimum of sociability for the organization's benefit. However, in organizations with strong professionals, management tends to be weak (Alvesson, 2002).

The fragmented culture is the least frequently encountered of the culture types and can be established in cases when a new culture is planned to be developed.

2.4 Communal culture (high sociability and high solidarity)

- The positive communal culture

This is the most appealing of the culture types proposed by Goffee and Jones (1996, 2003). It is characterized by friendships and a familial atmosphere, combined with creativity, passion for the company's product, high commitment to the organization, high tolerance for new ideas, and focus on dealing with competitors. This type of culture usually appears in small organizations that operate under the guidance of the founder, but less often in medium- and bigger – sized companies.

- The negative communal culture

This type of culture exhibits the negative characteristics of sociability and solidarity and can cause significant problems for organizations. Sociability and solidarity cannot easily coexist in a group. In low sociability, there exist groups of employees who pursue their own benefit and have no concern for their organization, while in low solidarity, employees believe that their organization's products are superior and that customers are making a mistake in choosing competitors' products over theirs.

- Leadership in the communal culture

Leaders in organizations with a communal culture are usually the business's founders, who tend to be charismatic, set the organization's vision, mission, and objectives and encourage employees to pursue them. These leaders identify with their organizations, and, when they leave or die, their organizations move to other types of culture.

In addition, Goffee and Jones (2003) mention four issues, which are related with the types of culture:

- 1) an organization may have more than one type of culture at a given time because it consists of different groups and different people with different activities,
- 2) the evolution of cultures can be communal – networked – mercenary – fragmented,
- 3) every type of culture can be good or bad and align to a special competitive environment, while two companies that operate in similar business environments may have different types of cultures and be equally successful, and
- 4) every type of culture can be functional or dysfunctional, while low sociability and low solidarity are catastrophic for organizations.

De Furia (1997) originally and Ribi re (2001) pointed out that sociability is a subcomponent of trust and together with solidarity generates the same types of organizational culture that suggested by Goffee and Jones (1996, 2003).

Although the framework proposed by Goffee and Jones (1996, 2003) is quite simple to understand and managers can fairly easily and accurately judge whether their corporate culture is high or low on the sociability and solidarity dimensions (Hoffman and Klepper, 2000) and determine which type of culture they are in, some authors express their views concerning the application of Goffee and Jones (Ibid) framework as follow: According to Ostrom and Hanson (2009), the four types of culture “are sufficiently broad to capture the way work gets done in the real world,” while every organization and its employees are unique, presenting behaviors that are no clear owe to a specific type of culture, but they can be a mixture of two types (such as networked or mercenary and fragmented). Buenger (2000) critiqued Goffee and Jones's (1996, 2003) theory, pointing out that

it is based more on the practical implementation on large organizations and less on academic research. Jehn (1997) also pointed out that conflicts can still arise between employees even where they share mutual concerns, benefits, and similar ideas on how to complete a project, making it difficult to categorize them under a single type of culture. Indeed, the use of generalizations can be risky, as organizations face continuously changing conditions, internally and externally. Yet despite the critiques and the complexity that these theories/models create (Stakes, 2010), Goffee and Jones's framework serves as a straightforward, comprehensive, and accessible basis for the in-depth study of organizational culture. Other theories/models that propose generic culture types share a number of similarities. Goffee and Jones's (1996, 2003) mercenary culture have similarities to Quinn and Rohrbaugh's (1981, 1983) *adhocracy culture*, where emphasis is placed on creativity and innovation and organization's objectives are pursued through entrepreneurial leadership. The fragmented culture (Goffee and Jones's, 1996, 2003) is similar to Handy's (1981) *person culture*, where the high-quality personnel undertake autonomous initiatives.

Another important issue relating to organizational culture and the introduction of new technologies is employee resistance to the upcoming changes. This can be reduced by helping employees thoroughly understand the need for the introduction of new technologies and innovation (Washington and Hacker, 2005), through dialogue and by making clear the potential benefits (Blair, 2000). Furthermore, employee resistance is positively related to the size and depth of the change (Linstead, 1997). According to Cagliardi (1994), the introduction of new technologies might also come up against another obstacle as a result of incompatibilities between said technologies and the legacy systems. Top management must take all this into account and try to predict potential resistance to change and proactively confront it.

The purpose of this study is to assess and explore the applicability of Goffee and Jones's (1996, 2003) theory on organizational culture types in the context of a specific public organization that successfully introduced new technologies. Thus, this paper's research question is how Goffee and Jones's (1996, 2003) theory on types of organizational culture ap-

plied to a Greek state-owned organization, Olympic Airlines, that introduced significant new technologies, and which specific characteristics of the culture types within the organization were identified by management and employed to contribute successfully to the introduction of new technologies.

3 The case of Olympic Airlines

Olympic Airlines (OA) was the Greek state carrier until it was privatized in 2009. It was established in 1957 by the Greek tycoon Aristotle Onassis and was granted a monopoly until 1975, when it was sold to the Greek government. In 2012, the airline was taken over by Aegean Airlines, the second major airline in Greece at the time. The present paper studies OA when it was state-owned.

According to Doganis (2001), the main characteristics of the state-owned airlines, including OA, are the following: occurrence of substantial losses, an over politicized structure, strong labor unions, overstaffing and low labor productivity, lack of a clear development strategy, bureaucratic management, poor service, and frequent changes of the carrier's management. The latter, in particular, created problems of continuity and consistency in OA's strategies (Fragoudaki, 1991).

Pangios (1997) and Potamianos (1999) pointed out some of OA's critical characteristics, including employee reluctance to seek out opportunities or take risks, slackness in the adoption of new technologies, inadequate training, and a lack of confidence in management. In conjunction with the fact that OA's employees enjoyed security of tenure, the above characteristics contributed to the development of limited commitment to company business (Fragoudaki, 1991).

OA's operating life under state ownership was characterized by the existence of numerous employee groups and networks that acted toward their own benefits. There were 14 different unions, as well as the Federation of Unions, representing employees from various departments, who were in serious conflicts with each other. Their purpose was to satisfy their members' needs, which were often opposite to those of the company; they blocked, delayed, or modified management decisions and created ob-

stacles for management, as well as for individual initiatives (Fragoudaki, 1991; Pangios, 1997; Potamianos, 1999; Doganis, 2001; Malagas, 2004). Furthermore, certain employee groups, depending on the nature of their work, enjoyed important power and privileges (e.g., bonuses, less working hours), and, either individually or collectively, resisted changes introduced by the management (Doganis, 2001); these employee groups included flight crews, engineers, and sales department personnel. There were also small groups of employees, in every department, who acted for their own benefits having minimum interaction and conflict with the rest (Pangios, 1997).

The organization's bureaucratic structure was based on various long-established processes and remained unchanged for many years (First Status Report, 1996). All the above facilitated the development of various subcultures, i.e., employee groups, networks, and cliques that were primarily interested in their own benefit, which reflects a characteristic of low sociability (Goffee and Jones, 1996, 2003).

One could say that the combination of permanent tenure, frequent management changes due to political appointments and thus the lack of strategy and firm management processes led to a slack working atmosphere. Increased individualism, a lack of shared objectives, an absence of rewards, and penalties for unsuccessful initiatives were all characteristics of OA (Potamianos, 1999) and also of low solidarity (Goffee and Jones, 2003). Employees' lack of interest in the company was proven by their resistance to management's previous efforts for change, such as the reforming training program in 1996 (Doganis, 2001) and the major restructuring program, designed by McKinsey, in 1997, both of which were introduced for the purpose of providing better services to customers and both of which failed (Potamianos, 1999). On the other hand, in a manifestation of high sociability, a small number of employees had created small groups and developed high solidarity, as described by Goffee and Jones (1996, 2003). In fact, they accomplished some major projects for the company, such as the introduction of two new reservation systems, the movement to the new Athens International Airport, and other smaller but significant projects. OA's management had identified and counted on them.

As far as OA's information technology (IT) systems (reservation and ticketing, departure control systems, Internet sales) are concerned, the majority of them were purchased from various specialized foreign providers and only a few systems were developed and supported by the carrier's IT department. The carrier's management faced significant problems to coordinate all the separate IT systems and paid high prices to their providers. In addition, OA's IT systems were obsolete and could not support the company's operations in an increasingly competitive environment. Major issues like inadequate investment and a lack of skilled staffed and long-term planning prohibited the IT department from effectively supporting the carrier's other functions (Olympic Airways Services, 2008). As a result, OA's only solution was to turn to outsourcing for the introduction of new technologies.

OA was one of the last scheduled airlines to introduce e-tickets (in compliance with IATA Reg. 722H). Further delay would have created severe problems to the airline's viability. Thus, the carrier's management, with the support of the Greek government, decided to introduce e-ticket and significant new to the airline technologies to replace all the old systems with new, offered by a single provider.

After an intensive workload process of 100 days, the project team and a handful of employees, who were selected by the management, achieved to migrate OA's systems to the new ones and the new technologies came into operation. Major training was provided to almost 2,500 OA employees, in order to familiarize them with the new technologies.

The new IT systems would support the provision of enhanced services to customers. The introduced new technologies had some similarities with the previous systems, and this contributed to employees learning them easier, to minimize costs (less training, some sub-systems remained, etc.) and to avoid some long-time introduction procedures (Malagas and Nikitakos, 2008).

Finally, the introduced new technologies immediately had significant positive results for the organization, such as a significant increase in passenger traffic, better customer service at airports, decrease of workload in many airline functions, decrease of the telecommunication and distribution costs and

tremendous increase of the airline's corporate web site visits and sales (Malagas and Nikitakos, 2008). Therefore, although OA was characterized by low sociability and low solidarity successfully introduced new technologies and this was the main focus of this study. The purpose of this study is to analyze and present those factors in employee culture that were used by the management to contribute to the successful introduction of new technologies.

4 Research methodology

For the needs of this study, a questionnaire was used to collect data, which was based on the questionnaire that Goffee and Jones (2003) suggested. Also general guidelines concerning the construction of the questionnaire and proposed by Easterby-Smith, et al. (1991), Oppenheim (1992), Brace (2004), and Bradburn, et al. (2004) were followed. In order to increase the response rate, specific strategies, suggested by Sudman and Bradburn (1982), Oppenheim (1992), and Cohen, et al. (2000) were applied; these included early warning for the study, confidentiality and anonymity of the participants and collected data, the well-structured questionnaire, telephone calls for further information etc. These strategies significantly contributed to increasing the response rate, which was about 98%.

In the pilot phase of the questionnaire, the selected participants had significant knowledge of the subject and considerable experience and, according to Diamantopoulos, et al. (1994), had a higher probability of finding possible mistakes. Their comments were incorporated into the final questionnaire. The final questionnaire was sent electronically (by e-mail) to 114 OA employees in total. Eight of them did not respond and four questionnaires were incomplete. Consequently, the analysis was based on 102 completed, valid questionnaires.

The participants in this study came from all hierarchical levels, but the majority came from the lower hierarchical levels which implement the strategies (Miles and Huberman, 1994). Most of the respondents were from the Commercial and Operations Departments such as reservations, ticketing and departure control, because the new technologies were introduced and implemented mainly in these

areas. Convenience sampling was applied, as the respondents were the main users of the new technologies and some of them to a large extend.

The reliability of the questionnaire was measured by using the test–retest method: the questionnaire was given to the same group of employees on two occasions, 10 days apart. The responses were compared, and no differences were found. The correlation coefficient was found $r > 0.90$, thus statistically significant.

For internal reliability, the relative coefficient alpha Cronbach was measured for statements referring to sociability and solidarity and was found $\alpha = 0.90$, surpassing Nunnally's (1978) 0.70 criteria for reliability acceptability. On the other hand, the alpha Cronbach for statements referring to the types of culture was found low (from 0.200 to 0.617).

This latter proves that the alpha Cronbach is affected by the number of variables, which in this case was low, and this constitutes a disadvantage of this method (Cortina, 1993). The questionnaire was based on the relevant questionnaire proposed by Goffee and Jones (2003), making carefully the necessary adjustments for this specific case. It contained questions on the demographic characteristics of the par-

ticipants, as well as 23 statements to do with the concepts of sociability and solidarity and a number of statements on to the positive and negative side of each type of culture (three questions each for the positive and negative side of every type of culture).

A Likert scale (1-strongly disagree to 5-strongly agree) was used. Factor analysis was used for the statistical analysis of the questionnaires' statements, as this operates on the notion that all measurable and observable variables can be reduced and grouped to fewer factors (latent variables), reducing dimensionality and find those that have low loadings (Field, 2005; Bartholomew, et al., 2011).

The answers to the questionnaires were statistically analysed by SPSS, and are presented below.

5 Statistical analysis and results

The descriptive statistics for the study's variables are shown on Tables 1 and 2. Specifically, Table 1 shows the descriptive statistics concerning the participants. A Likert type scale 1 to 9 was used to assess the respondents' participation in the process of introducing the new technologies.

Table 1. Descriptive statistics on the respondents' experience (in years) and the degree of their participation in the process of introducing the technologies

	Range	Mean	SD
Years of experience	39.25	19.57	8.97
Participation in the process of the new technologies introduction	8	5.11	2.39

Table 1 shows the respondents' considerable work experience (19.57 years on average), while concerning their participation in the introduction of new technologies, this was significant.

The 23 statements, to which factor analysis was applied, examine aspects of sociability and solidarity; they correlate with each other because they measure the same things (Field, 2005).

The process of factor analysis was applied seven times and the relevant tables, as well as a graph for the last run, are presented below.

Table 2 displays the eigenvalue in terms of the percentage of variance explained. The eigenvalue of a factor represents the amount of variance of the variables accounted for by that factor. The lower the eigenvalue, the less that factor contributes to the explanation of variances in the variables (Norris and Lecavalier, 2009). In this case, factor 1 explains 37.551% of the total variance and factor 2 explains 19.960%. It is clear that the first two factors explain relatively large amounts of variance (57.511%).

Table 2. Total variance explained by the application of factor analysis to the remaining 11 statements/variables

Component	Initial Eigenvalues			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	4.378	39.801	39.801	4.131	37.551	37.551
2	1.948	17.710	57.511	2.196	19.960	57.511
3	0.954	8.672	66.182			
4	0.810	7.365	73.548			
5	0.692	6.289	79.837			
6	0.505	4.588	84.425			
7	0.428	3.894	88.318			
8	0.399	3.626	91.944			
9	0.354	3.220	95.164			
10	0.313	2.846	98.010			
11	0.219	1.990	100.000			

Extraction Method: Principal Component Analysis

The scree plot presents the values from largest to smallest. The last substantial drop in the magnitude of eigenvalues shows the number of factors that should be included in the model (Cattell, 1966). However, this method has been criticized because of the lack of a clear definition of what constitutes a substantial drop (Kaiser, 1970).

In this specific case, the scree plot demonstrates that the curve begins to tail off after the third variable and starts to become beeline, in parallel with axis XX' (see Fig. 1). This underlines the correctness of taking these two factors into consideration.

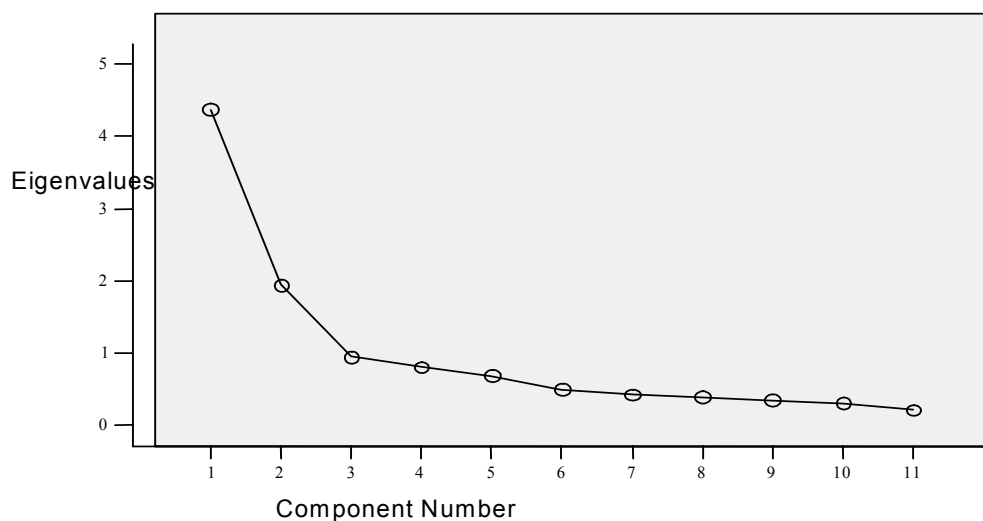


Figure 1. Graphical presentation of the scree plot for the remaining 11 statements/variables

After rotation, using the Varimax method, the 11 remaining statements/variables were loaded on either the first or the second factor. Careful examination of the content of statements that load onto the same factor and exhibit similarities or common themes is

key to classifying these statements. In order to label the factors in the model, researchers must examine the factor pattern to determine which items load highly on which factors and then identify what those items have in common.

Table 3. Rotated component matrix, using the Varimax method, and application of factor analysis into 11 remaining statements/variables, to two factors

Statements	Factors	
	1	2
1. The group I am assessing knows its business objectives clearly.	0.652	0.105
3. People follow clear guidelines and instructions about work.	0.760	0.031
5. Poor performance is dealt with quickly and firmly.	0.800	0.121
6. People often socialize outside of work.	0.053	0.780
9. When opportunities for competitive advantage arise, people move decisively to capitalize on them.	0.634	0.006
11. Strategic goals are shared.	0.721	0.180
12. People often confide in one another about personal matters.	0.137	0.891
15. People know a lot about each other's families.	0.081	0.831
18. Hitting targets is the single most important thing.	0.746	0.187
20. Projects that are started are completed.	0.660	-0.026
22. It is clear where one person's job ends and another person's begins.	0.739	0.081

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

Rotation converged: in 3 iterations.

As Table 3 shows, Goffee and Jones's (2003) theory displayed consistency when applied to the examined organization. This resulted in Factor 1 comprising statements/variables number 1, 3, 5, 9, 11, 18, 20, and 22. Factor 2 comprises statements/variables number 6, 12, and 15. Finally, based on the above groupings and Goffee and Jones's (2003) theory, Factor 1 can be named "solidarity" and the second "sociability".

In addition, factor analysis showed that the initial 23 statements can be explained by the two factors,

which contain 11 statements/variables, as this is the main purpose of this statistical method (Field, 2005; Bartholomew, et al., 2011) as mentioned above. However, the statements that were extracted from the factor analysis process should be examined in other cases. The variance percentage of the initial statements/variables, which remain at our disposal for further analysis, is 57.511% of the initial.

The application of factor analysis to the statements that are related to the positive and the negative side of every type of culture is presented below.

This application generates tables that demonstrate the total variance that is explained by every possible factor. In the case at hand, the percentage of the total variance explained is high (43.310–69.841), and this constitutes a selection criterion for factors. In this case, it is suggested that one factor should be selected.

The following tables show the loadings of the statements/variables for every type of culture. According to Abdi (2003) and Ertel (2013), the size of loadings shows the strength of the relationship between the variables and the factor, i.e., if the loading of the statements/variables is high, in absolute values (either positive or negative), this means that they characterize the particular factor, while low loadings,

in absolute values, mean that the statements/variables do not characterize the particular factor.

A positive sign in a statement/variable loading means that there is a positive relationship between the rest of statements/variables, while a negative sign of statement/variable loadings indicates an inverse relationship between statements/variables, and the statement/variable interprets the factor, in the reverse direction from what is expressed by the authors.

Table 4 presents the loadings of the variables on one factor. This table shows that the three variables present high loads and the same positive sign.

Table 4. Component analysis of the variables associated with the negative networked type of culture

Statements	Loadings
1. There's too much gossip here.	0.805
3. Presentations are all show and no substance.	0.739
5. Friendship often stops people from making tough decisions.	0.681

Extraction Method: Principal Component Analysis.

Table 5 shows the variables loadings that are associated with the positive networked culture type.

These loadings are high and have the same positive sign.

Table 5. Component analysis of the variables which are associated with the positive networked type of culture

Statements	Loadings
6. Friendships mean people stay even when times are rough.	0.794
4. People don't allow rules to hold them up, they cut through the bureaucracy.	0.666
2. Close relations help people communicate quickly.	0.570

Extraction Method: Principal Component Analysis.

Table 6 presents the variables loadings that are associated with the negative mercenary culture type.

These loadings are high and have the same positive sign, such as the above-mentioned types of culture.

Table 6. Component analysis of the variables associated with the negative mercenary type of culture

Statements	Loadings
1. The performance system tries people to undermine each other.	0.810
3. People spend too much time finding out how much the competition would pay them.	0.874
5. Different parts of the organization are so focused on their own targets that they miss business opportunities that require cooperation.	0.822

Extraction Method: Principal Component Analysis.

Table 7 presents the variables loadings associated with the positive mercenary type of culture.

The table shows that variables 4 and 6 exhibit high loadings and the same positive sign, while variable 2 exhibits a negative sign.

Table 7. Component analysis of the variables associated with the positive mercenary type of culture

Statements	Loadings
2. People care about their own individual targets and goals first, and the overall organizational performance second.	-0.471
4. Criteria for success and failure are clear, agreed upon, and publicized.	0.826
6. Priorities are determined quickly and followed decisively.	0.869

Extraction Method: Principal Component Analysis.

Table 8 presents the variables loadings associated with the negative fragmented type of culture.

Variables 1 and 3 exhibit high loadings and positive signs, and variable 5 shows lower loading and a negative sign.

Table 8. Component analysis of the variables associated with the negative fragmented type of culture

Statements	Loadings
1. Individuals are left alone to produce their best work.	0.760
3. Organizational success is largely the sum of individual successes.	0.795
5. There are few rules or meetings that get in the way of work.	-0.407

Extraction Method: Principal Component Analysis.

Table 9 presents the loadings of the variables associated with the positive fragmented type of culture.

The table shows that all variables have high loadings and positive signs.

Table 9. Component analysis of the variables associated with the positive fragmented type of culture

Statements	Loadings
2. People hardly see each other as colleagues.	0.777
4. People avoid tasks and activities that would benefit the organization as a whole.	0.823
6. People try to avoid each other.	0.780

Extraction Method: Principal Component Analysis.

Table 10 presents the loadings of the variables that are associated with the negative communal type of culture.

Variables 1 and 5 exhibits high loadings and positive signs, while variable 3 exhibits low loadings.

Table 10. Component analysis of the variables associated with the negative communal type of culture

Statements	Loadings
1. The group has within it all the resources and information it needs to succeed.	0.816
3. The leader of the organization would be nearly impossible to replace.	0.103
5. People feel confident and certain about the future.	0.789

Extraction Method: Principal Component Analysis.

Table 11 presents the loadings of the variables associated with the positive communal type of culture.

The loadings of the variables are high and have positive signs.

Table 11. Component analysis of the variables associated with the positive communal type of culture

Statements	Loadings
2. People challenge each other about what we do and how we do it.	0.786
4. People strongly identify with and live the values.	0.791
6. People all over the organization talk and share ideas.	0.700

Extraction Method: Principal Component Analysis.

6 Concluding remarks

6.1 Conclusions

The application of factor analysis presented above reveals the attributes of sociability and solidarity and

features of the types of organizational culture, which were identified and used by the management of OA, a Greek state-owned organization with particular characteristics, to proceed to the successful introduction of new technologies.

The majority of statements (see Tables 4–11), 21 out of 24, present high positive loadings. This means that they are positively associated with the other statements in the same group and that they characterize and interpret the specific types of culture in the same way as described by Goffee and Jones (2003).

Statements number 2 and 5 of the positive mercenary (Table 7) and negative fragmented (Table 8) types of culture respectively, present low and negative loadings, which means that they do not characterize the specific types of culture and are interpreted in the opposite direction.

Statement number 3 of the negative communal type of culture (Table 10) has low positive loading, which means that this statement does not characterize the specific type of culture, but is positively associated with the other statements of this type of culture. Based on the above analysis, the types of culture proposed by Goffee and Jones (2003) seem to ideally fit the case at hand. Those features and attributes of those cultures, which were the purpose of this research work, are highlighted here.

The respondents exhibited close social relationships, as shown on Table 3 statements. Specifically, they socialized outside working hours, discussed personal matters, and were familiar with each other's family situation and issues. In the case under study, these relationships helped management to complete tasks and they also played a key role in the success of the project. However, this is in contrast with the nature of the organization, which was characterized by the existence of various subgroups of employees which were interested in their own benefits, as presented above (Section 3).

The high sociability among the respondents was considered largely to be the result of their lengthy professional experience working together at OA, with an average of 20 years (Table 1).

Furthermore, as the respondents' solidarity is depicted on Table 3, the respondents were shown to pursue the organization's objectives, adhered to guidelines and instructions, did their job to meet targets, and worked hard to gain a competitive advantage. Meanwhile, management acted quickly and took the necessary measures to achieve the targets and meet objectives that had already made clear to employees.

In conclusion, in this case, the respondents showed increased interest in the success of the project and the organization, although OA was characterized by low solidarity and lack of employees' interest for the company's benefits.

6.2 Discussion

The findings of this study put forward useful suggestions for the management of state-owned organizations that introduce new technologies and have similarities with the examined carrier, in particular presenting low sociability and low solidarity as defined by Goffee and Jones (2003). Although these traits caused problems to the organization's daily operation, the project of the introduction of new technologies was successful (Malagas and Nikitakos, 2008) and important lessons can be gained for managers and researchers. It should be noted that the importance of the specific project has been proven by the fact that subsequently it was adopted by the new privatized Olympic and is still in use.

In this case, the existence of employee subgroups and networks did not impede the project's progress, but some employees, including the respondents, positively contributed to the introduction of new technologies. The findings of this study are in line with Parna and Tunzelaman (2007), who pointed out that innovations and new technologies have a higher likelihood of being successfully implemented where positive forms of employee networks exist.

In the specific project, some employees played a crucial role, worked hard to achieve the targets, and demonstrated high commitment to management and the organization, working alongside with some employees who were inactive. Therefore, the project's success was based on the high sociability and high solidarity (characteristics of the "communal culture") of some employees, while, overall, OA's employees exhibited low solidarity, as described above.

The main reasons for this were the employees' long time working for this company, the great importance of the new technologies for the company's viability, and the hope that the successful introduction of new technologies might secure a new job for them when the company was privatized. Thus, in similar cases,

management should identify individual employees and the various subgroups and networks of employees and put forward to them all the potential benefits and organization's gains that they may enjoy from the success of a project. Those could include new more challenging jobs, better services and relations with customers, higher quality of products and improved processes, better confrontation of the competition, and higher financial results.

Managers should discover what enhances employee sociability and solidarity and utilize this to direct employees to the completion of projects important to the organization. Although it is difficult to establish positive communal culture in medium-to-large organizations (Goffee and Jones, 1996, 2003), management should continue to aim for cultures that contain the maximum/higher possible solidarity and sociability, as these help achieve better results regarding the introduction of new technologies. These characteristics would be found more in communal, mercenary and networked types of culture.

The weakness of OA's management, which resulted in a series of short-term targets and a lack of ambitious long-term objectives, affected the organization's operation in a negative way and created serious obstacles to everyday operations. For years, OA's management focused on production and showed a lack of interest in the changes that took place in the external competitive environment (Fragoudaki, 1991). However, in the specific case, the airline's management take the right decisions selected new technologies with the similarities with the current ones, persuade governmental officials to ensure the required budget (as the airline was state-owned and faced significant financial problems) and established a very efficient project team to run the task.

Furthermore, in critical times for OA, as Potamianos (1999) put forward, employees worked hard and demonstrated *philotimo*, a core value of Greek culture and this was exploited by management to complete crucial tasks. *Philotimo* is a value that drives people's behavior and it is based on benevolence and altruism. It is acknowledged that strong traditions and national culture affect the organizational culture and employee behavior (Hofstede, 1983; Rizescu, 2011). Values such as the *philotimo*

that positively lead employees' efforts to the company's objectives must be put forward by management.

The role of management is important in reinforcing new aspects of culture (Schein, 2004). As regards the specific project of introduction of new technologies, it could be said that OA's top management and the project team coordinated actions and achieved the success of the project. The success of this specific project at OA was based on the important role of the project team (Malagas, et al., 2009), who nurtured high sociability and high solidarity among its members and some other employees.

Management capitalized on the extensive knowledge and experience of the project team's members and of the other employees who joined in with a positive attitude. The project management's participative leadership style resulted in greater commitment, improved performance and productivity of employees, and increased support for the project and its targets (Miller and Monge, 1986; Ismail, et al., 2010).

Therefore, an organization's management, after establishing a project team comprising employees with high sociability and high solidarity characteristics and extensive knowledge of the subject, should have them intermingle with employees who lack those characteristics.

Also training is important and should include new roles and behaviours for employees. In the case at hand, training was provided by OA employees who were trained as trainers and worked hard to rapidly move employees up the system learning curve and also contributed to establishing user confidence in the new system (Malagas and Nikitakos, 2008).

Moreover, implementing available guidelines on the introduction of innovation and new technologies and following suggestions from the relevant literature on how to deal with the coming changes are also steps that should be taken in similar cases. Steps suggested by Kotter (1996) were followed in this specific case and contributed to the project's success (Malagas, et al., 2013).

In conclusion, the development of high solidarity in conjunction with high sociability (a communal, mercenary, or networked type of culture) is important and recommended to be pursued by man-

agement, regardless of the status of an organization or the sector in which it operates.

The two concepts are interdependent and should co-exist in order to have an effective organizational culture that embraces the introduction of new technologies. Management should make every effort to achieve both high solidarity and high sociability and the motivation theory may offer some ideas to achieve both.

6.3 Limitations of the Study and Recommendations for future research

In the present study, the types of culture theory proposed by Goffee and Jones (1996, 2003) were applied to OA, a Greek state-owned organization. Focus on a single industry of a single country is a limitation of this study, as it can decrease the ability to generalize the conclusions. It would be useful to extend this to additional state-owned and state-managed organizations in Greece and other countries, as, it is believed, that similar characteristics can be found in many other especially state owned organizations.

This could be the topic of further research. It could also be said, that it consists a limitation of this study the fact that it was directed at those employees who were the main users of the new technologies; however, they were the ones who were directly concerned with the project. Including other employees, who use less or not at all the new technologies, may have generated different findings.

The use of qualitative research might be useful in the specific case to complement the information offered by questionnaires, in order to obtain more information concerning the factors and drives that lead to the successful introduction of new technologies.

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