

The Role of Organizational Culture in Organizational Innovation in Higher Education Institutions – A Study of Libyan Public Universities

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Abstract: This paper investigates the relationship between organizational culture types and organizational innovation and, in particular, to identify the type of culture that has the greatest impact on organizational innovation in higher education institutions in Libya. In the paper, two critical variables related to the organization are given emphasize: (a) organizational culture, and (b) organizational innovation. A few studies have introduced evidence on the role of organizational culture in organizational innovation (Obenchain & Johnson, 2004). Furthermore, the study proposed that four culture types are related with organizational innovation types. To test the hypotheses, data were collected from 390 employees in higher education institutions in Libya. Respondents for the study included executives, administrators, and faculty members at three universities located in Tripoli, Benghazi, and Sirte. The researcher had used the Competing Values Model (Cameron & Quinn, 1999) to develop a research framework, and has employed a quantitative method to determine the relationship between organizational culture and organizational innovation within universities in Libya. The regression analysis results suggest that the clan, adhocracy, market, and hierarchy culture types were significant predictors of organizational innovation types. Specifically, market culture had the greatest impact on technical innovation as the dependent variable. Likewise, the hierarchy culture had the greatest impact on administrative innovation as the dependent variable.

Key words: organizational culture, organizational innovation, technical innovation, administrative innovation

INTRODUCTION

Innovation is a topic that is particularly relevant in organizations today as a result of intense competition and fast-paced change occurring throughout the world (Francis & Bessant, 2005). Studies show that innovation is affected by factors both external to and internal to organizations (Schlegelmilch *et al.*, 2003). Organizations having sustainable and strong innovation ability are those that have a better understanding of the general market and the environmental driving forces, and are able to target their innovative efforts more effectively. This includes analysis of technologies, developing customer needs, being aware of the total competitive environment, establishing basic goals of the organization, and understanding existing organizational culture.

It has been suggested that organizational culture is an important factor affecting innovation. A number of empirical studies have investigated the relationship between organizational culture and organizational innovation and their impact on organizational outcomes in the United States and Europe. However, there is a dearth of studies undertaken in the North Africa region, particularly in Libya.

As is known, higher education is the most important sector in the economy of many countries, one of which is Libya. In order to achieve an education system of a high standard in Libya, many problems and challenges must be addressed. Some research on education system in Libya has suggested that innovations in education must be implemented. A number of comprehensive reviews have been written with regard to the factors that may influence innovation. Organizational culture appears to have an influence on the extent of innovation in an organization (Tuan & Venkatesh, 2010). Given the importance of innovation, there is a need for a deeper look into the nature of organizational culture and for an investigation into its relationship with organizational innovation.

Obviously there are strong motivations for universities to be innovative and to find new ways to maximize service quality. The problem this study seeks to resolve is how the organizational culture encourages employees to be more innovative. The challenge, therefore, is to identify the type of organizational culture that has most influence on organizational innovation.

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Literature Review:

Organizational Culture:

Research into organizational culture has increased over the past several decades, although there is no agreement on a specific definition of the organizational culture (Abu-Jarad, Yusof & Nikbin, 2010). To enhance understanding of this important phenomenon, it is necessary to identify the commonality of those definitions that have been developed by reviewing the relevant literature. Linn (2008) defined organizational culture as “a pattern of shared basic assumptions that is learned by a group of people as it solves problems of external adaptation and internal integration, that has worked well enough to be considered valid and, therefore, to be taught to new members as the correct way to perceive, think, and feel in relation to those problems” (p.89).

Culture is also maintained and transmitted through stories, rituals, symbols and practices. Organizational culture serves to create a social order and to coordinate member behavior (McAleese & Hargie, 2004).

Another opinion is that of von Thaden *et al.*, (2002) who regarded organization culture as a system of shared values (what is important) and beliefs (how things work) that interact with the organization’s workforce, organization structures, and control systems to produce behavioral norms (the way things done around here).

Numerous other studies have reported that organizational culture represents the assumptions and core values developed by a particular group in order to adapt and deal with internal and external influences, which had been agreed upon, and the need to teach new workers in the organization to understand things and think about how to serve the official targets (Robbins, 2003; Scott *et al.*, 2003).

Nevertheless, organizational culture likely extends beyond its impact inside the organization, affecting client perceptions and potentially contributing to a firm's performance. In addition, the culture of an organization is an important factor for the success of projects involving any organizational changes (Antony & Banuelas, 2002). Indeed, there is a strong support for the importance of organizational culture in innovation adoption in an organization. It has been discovered that a mismatch of the culture of an organization and the cultural assumptions embedded within an information system employed by an organization, for example, can result in an unfavorable outcome (Jarvenpaa & Staples, 2001).

According to Cameron and Quinn (1999), there is no single correct framework to determine the dimensions of organizational culture. Rather, they advocate an approach that has several important advantages for an organization interested in diagnosing and changing culture, as well as for scholars who have the desire to investigate organizational culture using quantitative and qualitative methods. Their framework provides a means for an organization to understand and analyze key aspects that generate strategies to change culture and improve performance (Cameron & Quinn, 1999).

This study will address the organizational culture at the universities of the study sample and examine the role of organizational culture at the organizational innovation through the following four-types. These types are summarized as follows:

Market culture: characterized by emphasizing on the competitive advantage and market superiority where leaders drive the organization toward productivity, results and profit, an emphasis on winning holds the organization together, the prevailing concern is on competitive actions and achieving goals, targets and increasing its competitive position (Prajogo and McDermott, 2005).

Adhocracy Culture: emphasizing innovation and risk-taking where people take risks, leaders are visionary and innovative, the commitment to experimentation and innovation holds the organization together, readiness for a change and meeting new challenges are important, and the emphasis is on being at the leading edge of new knowledge, services and products. (Shepstone and Currie, 2008)

Hierarchy Culture: characterized by regulations and formal structures where formal rules and policies hold the organization together, procedures govern what people do, effective leaders are good coordinators and organizers, maintenance of a smooth running organization is important and the long-term concerns are stability, predictability and efficiency. (Alexakis, Platt, & Tesone, 2006)

Clan Cultures: is represented by a friendly place to work where people share a lot of themselves, leaders serve as mentors, the organization is held together by loyalty and tradition, commitment is high, the emphasis is on the long-term benefit of individual development, high cohesion and morale and a premium is placed on teamwork, participation and consensus (Koutroumanis & Alexakis, 2009).

Innovation: The Concept:

The subject of innovation is of increasing interest in all organizations and all divisions of firms that need to develop and improve their products and services. It is instructive that such organizations must contend with internal and external forces or factors, especially after economic crises, successive technological developments, attention to environmental issues, as well as constant changes in customer behaviour. This section presents research and studies conducted on the definition of innovation, perspectives on innovation, types of innovation and organizational innovation.

A broader definition is that cited in Mudrak *et al.*, (2004) where innovation is defined as: management practices, involving multiple activities, performed by multiple actors from one or several organizations, during

which new combinations of means and/or ends, which are new for creating and/or adopting a unit, are developed and/or produced and/or implemented and/or transferred to old and/or new market-partners. Another perspective suggests that innovation is a very vital factor in determining productivity, competitiveness and social gain with the organizational operations (Davison & Blackman, 2005).

Singh (2011) suggested that innovation is the use of new technical and administrative knowledge to offer a new product or service to customers. According to Birkinshaw *et al.*, (2008). Administrative innovations are new approaches and practices to motivate and reward organizational members, devise strategies and structures of tasks and units, and modify the organization's management processes.

Technical innovations are described as innovations that produce changes in products or services, or in the way those products are produced or services are rendered (Daft, 1986).

Types of Innovation:

Types of innovation can be classified according to the different approaches taken by the researchers. The first approach is the socio-technical system approach, in which innovation is classified according to systems where they occur. Another approach emphasizes the attributes of innovation, while the third is categorized by the source of innovation. Innovation is classified by many researchers and theorists into a variety of categories. Knight (1976), for example, classified innovation into external and internal types. To him, a new approach of doing things within the organization's fabric is internal. It is argued that external innovation is easier to accomplish than internal innovation.

March and Simon (1958) looked at innovation on the basis of whether or not it was routine in organizations. In their view, routine innovations included innovations that were mandatory and were part of continuous improvement, while non-routine innovations were unplanned for in the workplace. In the research study conducted by Damanpour (1992), six classes of innovations were identified: administrative, technical, product, process, radical and incremental.

Likewise, another stream of research identified six areas of innovation, as follows: new products, new markets, new ways of organizing, new services, new methods of production, and new sources of supply (Johanessen *et al.*, 2001). Other scholars have classified organizational innovation into three functional categories: administrative innovation, process innovation, and product innovation (Mavondo *et al.*, 2005).

Meanwhile, Junarsin (2009) views innovation from two dimensions: Incremental Innovation and Discontinuous Innovation. In many other studies, the distinction has been made between administrative and technical innovation (Liao *et al.*, 2008 & Obendhain and Johnson, 2004). The convergent views of the authors are that most innovations are made up of both new technical and new administrative components (Revati, 2005). Furthermore, the distinction between administrative and technical innovations is important because it relates to a more general distinction between social structure and technology (Damanpour & Gopalakrishnan, 1998).

Likewise, Tuan & Venkatesh, (2010) introduced many categories of innovation, such as technical innovation, which focuses on technological phase and invention, and product innovation, which aims at renovation and improvement of products and process methods adopted by companies. In addition, other added administrative innovation that includes all administration works and administrative processes and functions of an organization, such as financial, marketing and personnel functions (Ravichandran, 2000). Marketing innovation focuses on marketing activities and marketing work procedures, which is related to marketing mixture and any other procedures that contribute to creating a new market (Kim and Mauborgne, 1999).

According to Daft (1986), any process that would increase production or quality of products or services is best depicted as a technological innovation. On the other hand, processes that are concerned with organizational structures, goals, or performance systems are referred to as administrative innovations (Birkinshaw, Hamel & Mol, 2008). Administrative innovation involves processes, whereas technical innovations are more outcome-based. According to Friedrich *et al.*, (2010) technological innovation is better described as product innovation, while administrative innovations align with process innovations.

Specifically, Daft (1982) argued that administrative and technical innovations imply potentially different decision-making processes, and together they represent changes introduced in a wide range of an organization's activities. In addition, these forms of innovation are grouped together as organizational innovation (Liu, 2005). Given the importance of both technological and administrative innovation in sustaining an output (Tan and Nasuridin, 2006) this study will focus on these two types of innovation as the dimensions of organizational innovation.

Organizational Innovation:

The first series of empirical studies in organizational innovation were carried out in the 1990s, and focused on public sector organizations. There was a shift between 1970s and 1980s, as the focus of research was on radical process innovation, while in the 1990s, studies on administrative innovation slowly gained momentum. Today, innovation studies use different perspectives and dimensions to understand the concept leading to inconsistencies and ambiguities (Revati, 2005).

Many definitions of organizational innovations can be found in the literature. One scholar, Damanpour (1991) is of the opinion that organizational innovation can be compared to the adoption of a new idea or behaviour to the establishment, whereas Mitchell (2009) describes organizational innovation as discontinuous and sometimes incremental changes in business practices. Organizational innovation indicates new ways of organizing work in areas such as workforce management, employee empowerment, and new individuals' partnership (Jen Shieh & Wang, 2010). Since the focus of the current study is on real organizational behavior, throughout this study we will consider West and Farr's (1990) definition of organizational innovation. They defined innovation as: "the intentional introduction and application within a role, group, or organization of ideas, processes, products or procedures, new to the relevant unit of adoption, designed to significantly benefit the individual, the group, organization or wider society" (p.9).

Link between Organizational Culture Types and Organizational Innovation Types:

While earlier empirical studies have provided for examining the relationship between the CVF of culture and organizational innovation types, there remains a need for further investigation. Each study that analyzed the culture types and organizational innovation found support for a relationship between at least one culture types and organizational innovation. However, very few innovation studies conducted have investigated higher education (Hannah, 2003). This study examined the type of organizational innovation that is related to each culture type.

Some empirical studies lend support to the argument that culture type influences innovation. For example, Obendhain and Johnson, (2004) carried out research on the relationship between organization's culture and product and process innovativeness. Their study utilized the instruments used in the organizational culture (OCAI), and organizational innovation was measured as total frequency of technical and administrative innovation. The results of their study explored the association between organizational culture types on product and process innovation. Mavondo and Farrell (2003) in their study also found a positive relation between organizational culture and product innovation. Thus, we attempt to determine the relationship between the four culture types and organizational innovation types by investigating the following proposed hypothesis:

Ho1: The four culture types are not related to organizational innovation types within higher education institutions.

For further understanding of these relationships, organizational culture and organizational innovation types, this study tested the following two types of organizational innovation: administrative innovation, and technical innovation. The types of organizational culture investigated were: clan culture, adhocracy culture, market culture and hierarchy culture. This study will further investigate the role which organizational culture plays in organizational innovation.

Different studies of innovation types had a binary focus such as product / process, administrative / technical or radical / incremental (Birkinshaw *et al.*, 2008; Friedrich *et al.*, 2010; Jansen *et al.*, 2006). Administrative innovation and technical innovation constitute a binary model of types of innovation (Rowley *et al.*, 2011), with technical innovation relating to new products, processes or services, and administrative innovation relating to new approaches and practices to motivate and reward organizational members, devise strategy and structure of tasks and units, and modify the organization's management processes (Birkinshaw *et al.*, 2008).

Technical innovation includes any type of innovation structured from a technical viewpoint which lies at the heart of operations; such innovations influencing the flow of product or process operations (Damanpour, 1991). Rowley *et al.* (2011) suggested that the success of the technological innovation is directly related to its acceptance by the market and a sustainable and adequate value added to the organization. Studies have acknowledged the existence of a relationship between organizational culture and technical innovation (Mavondo & Farrell, 2003; Tuan & Venkatesh, 2010).

If organizations want to survive they need to invest in different types of innovation, since different types of innovation influence organizations in different ways and achieve different outcomes and impacts (Siguaw *et al.*, 2006). On the other hand, if the innovation does not generate adequate results for the organization, the managers will be penalised (Vasconcellos *et al.*, 2009). Damanpour and Aravind, (2006), suggest that product and process innovations are complementary, and that organizations that pursue both simultaneously would derive full benefits and better performance. Ettlie (1988) found that successful manufacturing firms adopt technological and administrative innovations simultaneously, and the congruency between the two types is especially important in competitive conditions. Similarly, another research on the adoption of product (technological) and process innovations (administrative) suggests that these innovation types are intertwined such that continual improvement in one would lead to the other (Fritsch and Meschede, 2001).

As stated earlier, however, most empirical studies of the innovation-culture relationship have been cross sectional, based on a single innovation type (Hernandez-Mogollon *et al.*, 2010; Valencia *et al.*, 2010). Specifically, innovations are likely to be adopted and implemented in a manner that maintains and reinforces the

organization's existing culture. Organizational culture types have been shown to have a positive relationship with types of organization innovation in local governments in the United States. Knowledge about the culture type leading to proposals for new ideas for adoption can contribute to management decision-making (Obendhain & Johnson, 2004). Therefore: based on the foregoing, we propose to investigate the following hypotheses:

Ho1a: The four culture types are not related to technical innovation within higher education institutions.

Ho1b: The four culture types are not related to administrative innovation within higher education institutions.

Research Questions:

The four culture types (e.g. clan, adhocracy, hierarchy, and market) embedded in the framework were assessed to establish the extent to which the culture types have an impact on organizational innovation success. To facilitate the study of the impact of the organizational culture on organizational innovations of the Libyan higher education institutions and to better understand this relationship, the following research question was posed:

Question 1: Do organizational culture types relate to organizational innovation in higher education institutions in Libya?

Question 1.1: Do organizational culture types relate to technical innovation in higher education institutions in Libya?

Question 1.2: Do organizational culture types relate to administrative innovation in higher education institutions in Libya?

Conceptual Framework:

This study used a quantitative method to answer the research questions and to provide a detailed understanding and description of the organizational culture and organizational innovation in higher education institutions in Libya. Furthermore, the current study utilized a theoretical underpinning of organizational culture types developed by Cameron and Quinn (1999), which segments organizational culture into four quadrants (clan, adhocracy, hierarchy and market). The study addressed the organizational culture at higher educational institutions in Libya and examined the role of the types of organizational culture on organizational innovation in the higher education environment as shown in Figure 1.

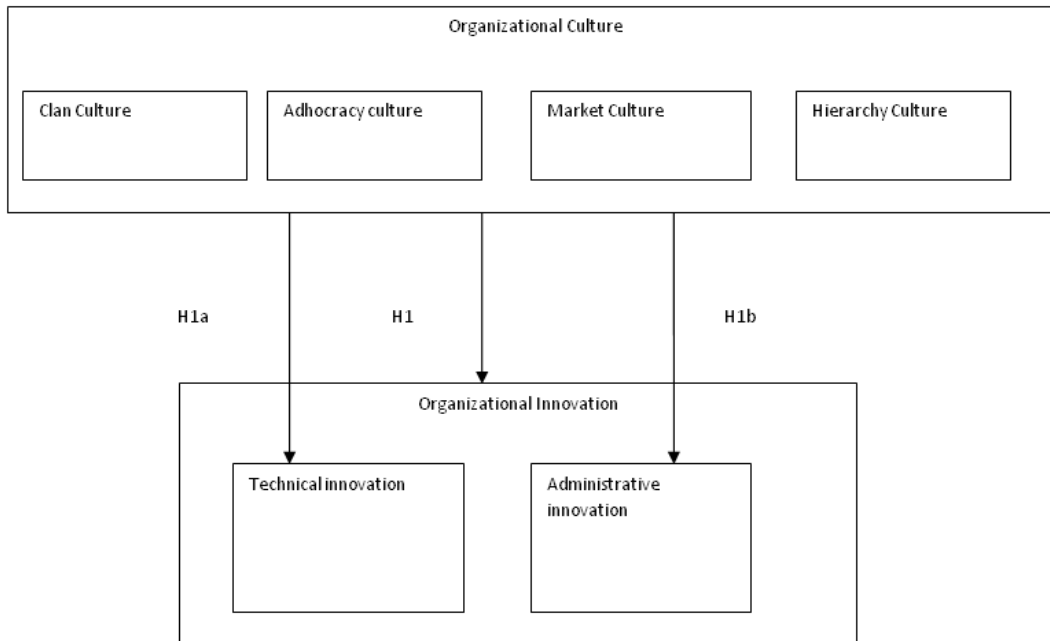


Fig. 1: Conceptual Framework.

Research Methodology:

Description of the Research Design:

Research design is described by Yin (2003, p. 20) as “the logical sequence that connects the empirical data to the study’s initial research questions and, ultimately, to its conclusions”. Additionally, its key function, as revealed by De Vaus (2001, p. 9), is “to ensure that the evidence obtained enables us to answer the initial

question as unambiguously as probable". Choosing a suitable research design is very important as it is considered to be the main element in conducting the study, because it essentially works to organize the study's aim and objectives, rationale and conditions, as well as the nature of the information and the data required for carrying out the study. This research provides a quantitative approach that can be used to better understand organizational culture as a first step in an effort to foster innovative thinking and improve organizational outcomes in Libyan public universities, organizations that decision makers are keenly interested in because of their role in national development.

Data Collection and Sample:

The research used a one-time survey to obtain research data. Data were composed of two main sets of information: four different types of organizational culture, and two types of organizational innovation. Technical and administrative innovations were calculated to give the dependent variables of organizational innovation. The existence of a significant relationship was used to confirm the prediction. The population included three universities located in Benghazi, Tripoli and Sirte. It was designed to cover a range of executives, administrators and faculty members. A total of 390 questionnaires were distributed and a total of 312 Completed questionnaires were returned, giving a rate of return of 0.80 percent. Of these surveys 303 Was suitable for data analysis. This study used Organizational Culture and Organizational Innovation Assessment Survey Instrument, to determine the relationship between organizational culture and organizational innovation types among employees within the universities under study.

Measures:

The Organizational Culture construct included the four cultures variables that Cameron and Quinn identified: Clan, Adhocracy, Market, and Hierarchy. Each of these ideal types can be described using six institutional dimensions of culture: the core values of the organization, the style of the organization's leader, the management style toward the employees, the espoused values or accepted norms of the organization, the existing work environment of the organization, and success criteria of the organization. This 6 x 4 arrangement results in 24 questions on the culture portion of the survey, which are taken from Cameron and Quinn's survey instrument (1999). The assessment instrument for organizational culture has been used in previous studies to examine organizational culture in the public sector (Bradley & Parker, 2001; Quinn & Spreitzer, 1991) thereby providing justification for its use in this study.

Organizational Innovation Assessment Instrument:

The Organizational Innovation Assessment Instrument used in this study is based on the conceptualization of Perry (1993) and Shin (1996). The dependent variable is operationalized through the seven questions on the innovation portion of the survey, which are adopted from Obenchain's survey instrument (2002). This instrument measures organizational innovation which includes technical innovation and administrative innovation. Of the seven questions, the following five questions indicate technical innovation: 1) the creation of wholly new services/programs for students; 2) the conversion of existing services/programs into recognizably different forms; 3) the extension of services/ programs to new groups of students previously not served; 4) the incorporation of new techniques/inputs to produce services/programs; and 5) the development of new practice knowledge /theories to produce services / programs with a given technique and different mixes of input. Finally, administrative innovation was measured by the following two questions: 6) the creation of new organizational structures for the management of people, and 7) the building of new inter-organizational relationships.

Analysis:

The collected data were analyzed using statistical package SPSS for Windows (Version 18.0). In order to test the hypotheses, multiple linear regressions were conducted to examine the direct effects of the predictors on the types of organizational innovation. Regression analysis is a statistical tool for the investigation of relationships between variables.

Multiple regression analysis was carried out for each study variable stated in the framework. In a multiple regression analysis, a predictor is identified through interaction, where for each interaction pair, the significance of the interaction is confirmed by the significant beta weight. The statistical models used for testing the hypotheses are structured according to the following equations (Kahane, 2008):

Model:

$$Y_1 = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_n X_n + \epsilon_i$$

Where:

Y is the outcome variable

β_1 is the coefficient of the first predictor **X_1**

β_2 is the coefficient of the second predictor X_2

β_n is the coefficient of the not predictor X_n

ϵ_i is the difference between the predicted and observed value of Y for the i^{th} the subject.

Results:

In the study, organizational culture was hypothesized to have a significant relationship with organizational innovation.

This hypothesis was measured through two sub-hypotheses which are set out below.

Ha1a: The four culture types are not related to technical innovation within higher education institutions.

Ha1b: The four culture types are related to technical innovation within higher education institutions.

Analyzing the data entailed applying a multiple regression analysis between four culture types and organizational innovation types. From the Model Summary shown in Table 1, it is clear that the R-squared value (r^2) is 0.40; therefore, about 40% of the variation in the technical innovation is explained by organizational culture types. However, the regression analysis calculates the adjusted r squared values at 0.39. The overall F for the model is significant (F = 98.16, p = 0.000) (as $P < 0.05$). Therefore, the null hypothesis H01a is rejected and Ha1a is accepted.

Table 1: Regression Model Summary.

Model	R Square	Adjusted R Square	F Change	Sig
1	0.40	0.39	98.16	.000

Furthermore, from Table 2 showing the Beta value, it can be seen that the higher number in the Beta is 0.413 for market culture, where the significance value was < 0.05 . As be seen in this Table, all predictors were statistically significant, which indicates that there is relationship between the independent variables and technical innovation.

Table 2: Summary of Multiple Linear Regression Analysis for Variables Predicting Technical Innovation.

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	0.751	.169		4.438	.000
CL	0.190	.021	.290	9.074	.000
AD	0.257	.021	.394	12.208	.000
MA	0.275	.021	.413	12.936	.000
HI	0.079	.025	.100	3.113	.002

Then, the hypothesized relationship between four culture types and technical innovation may be written:

$$Y_1 = 0.751 + 0.190 CL + 0.257 AD + 0.275 MA + 0.079 HI + e$$

Where:

Y_1 = Technical Innovation

β_1 is the coefficient of the first predictor Clan Culture (CL)

β_2 is the coefficient of the second predictor Adhocracy Culture (AD)

β_3 is the coefficient of the first predictor Market Culture (MA)

β_4 is the coefficient of the second predictor Hierarchy Culture (HI)

Another multi-regression analysis was performed including administrative innovation. From the Model Summary as shown in Table 3, it can be seen that the R-squared value (r^2) is 0.31; therefore, about 31% of the variation in the administrative innovation is explained by organizational culture types. However, the regression analysis calculates the adjusted r squared values at 0.30. The overall F for the model is significant (F = 67.31, p = 0.000) (as $P < 0.05$). Therefore, the null hypothesis H01b is rejected and Ha1b is accepted.

Table 3: Regression Model Summary.

Model	R Square	Adjusted R Square	F Change	Sig
1	0.31	0.31	67.31	.000

Furthermore, from Table 4 showing the Beta value, it can be seen that the higher number in the Beta is 0.413 for hierarchy culture, where the sig. values was < 0.05 . It can be seen clearly in this Table that all

predictors were statistically significant; which indicates that there is a relationship between the independent variables and administrative innovation.

Table 4: Summary of Multiple Linear Regression Analysis for Variables Predicting Administrative Innovation.

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	2.718	0.173		15.712	.000
CL	0.130	0.021	0.208	6.080	.000
AD	0.178	0.021	0.285	8.277	.000
MA	0.137	0.021	0.216	6.324	.000
HI	0.304	0.026	0.402	11.681	.000

Then, the hypothesized relationship between four culture types and Administrative innovation may be written:

$$Y_2 = 2.718 + 0.130 CL + 0.178 AD + 0.137 MA + 0.304 HI + e$$

Where:

Y_2 = Administrative Innovation

β_1 is the coefficient of the first predictor Clan Culture (CL)

β_2 is the coefficient of the second predictor Adhocracy Culture (AD)

β_3 is the coefficient of the first predictor Market Culture (MA)

β_4 is the coefficient of the second predictor Hierarchy Culture (HI)

Discussion:

This paper has focused on the link between organizational culture and organizational innovation types. Our findings provide support for this relationship. Furthermore, we found that clan, adhocracy, market, and hierarchy culture types were significant predictors of organizational innovation types. Specifically, the influence of market culture was shown to be highly significant on technical innovation. This means that competitiveness, goal achievement and market superiority were most important in influencing the implementation of technical innovation in the Libyan higher education institutions. Libyan organizations should not ignore the above suggestions on how to achieve competitive advantage. Hence higher education institutions in Libya should initiate efforts to promote characteristics of a market culture among the employees by shifting the focus of the organization to external environment and competitive rivalry rather than enhancing the internal environment.

Meanwhile, on the other side, the findings also suggested that hierarchy culture (b =0. 402, p < 0.000) had the biggest impact on administrative innovation. This pattern of findings would suggest that higher education institutions were internally focused on efficiency and production costs minimization and characterized more by stability and dependability. This is a potentially difficult area for the managers, since the most prevalent culture type is hierarchical - that is, the least conducive to innovation. Hence it is necessary that managers of these institutions take steps in the coordination and organization of the responsibilities to facilitate cross-fertilization of ideas among employees with diverse backgrounds and training.

REFERENCES

Abu-Jarad, I.Y., N. Yusof, D. Nikbin, 2010. "A Review Paper on Organizational Culture and Organizational Performance", *International Journal of Business and Social Science*, 1(3): 27-46.

Alexakis, G., A.R. Platt, D.V. Tesone, 2006. "Appropriating biological paradigms for the organizational setting to support democratic constructs in the workplace", *Journal of Applied Business and Economics.*, 6(1): 17-28.

Antony, J., R. Banuelas, 2002. "Key Ingredients for the Effective Implementation of a Six Sigma Program", *Measuring Business Excellence*, 6(4): 20-27.

Birkinshaw, J., G. Hamel, M.J. Mol, 2008. "Management Innovation", *Academy of Management Review*, 33(4): 825-845.

Bradley, L., R. Parker, 2001. "Public sector change in Australia: Are managers' ideals being realized?", *Public Personnel Management*, 30: 349-361.

Cameron, K.S., R.E. Quinn, 1999. *Diagnosing and Changing Organizational Culture*. Upper Saddle River, NJ: Prentice-Hall.

Daft, R.L., 1982. Bureaucratic versus Non-Bureaucratic Structure and the Process of Innovation and Change. In *Research in the Sociology of Organizations*, edited by Samuel B. Bacharach, 129–66. Greenwich, CT: JAI Press.

Daft, R.L., 1986. *Organization Theory and Design*. St. Paul, MN: West.

- Damanpour, F., 1991. "Organizational Innovation: A Meta-Analysis of Effects of Determinants and Moderators", *Academy of Management Journal*, 34(3): 555-590.
- Damanpour, F., 1992. "Organizational Size and Innovation", *Organization Studies*, 13(3): 375-402.
- Damanpour, F., D. Aravind, 2006. Product and process innovations: A review of organizational and environmental determinants. In J. Hage & M. Meeus (Ed.).
- Damanpour, F., S. Gopalakrishnan, 1998. Theories of organizational Structure and innovation adoption: the role of environmental change., *Journal of Engineering and Technology Management*, 15(1): 1-24.
- Davison, G., D. Blackman, 2005. "The Role of Mental Models in Innovative teams", *European Journal of Innovation Management*, 8(4): 409-423.
- De Vaus, D.A., 2001. *Surveys in Social Research*. London: Sage.
- Ettlie, J.E., 1988. *Taking Charge of Manufacturing: How Companies Are Combining Technological and Organizational Innovations to Compete Successfully*. Jossey Bass: San Francisco, CA.
- Francis, D., J. Bessant, 2005. "Targeting innovation and implications for capability development", *Technovation*, 25(3): 171-183.
- Friedrich, T.L., M.D. Mumford, B. Vessey, C.K. Beeler, D.L. Eubanks, 2010. Leading for innovation: Reevaluating leader influences on innovation with regard to innovation type and complexity. *International Studies of Management & Organization*, 40(2): 6-29.
- Fritsch, M., M. Meschede, 2001. "Product innovation, process innovation, and size", *Review of Industrial Organization*, 19: 335-350.
- Hannah, K.W., 2003. Effects of organizational culture on innovation decisions: Does university culture affect the adoption of classroom technology? The Dissertation of Doctor's Degree, Philosophy, Vanderbilt University, United States.
- Hernandez-Mogollon, R., G. Cepeda-Carrion, J.G. Cegarra-Navarro, A. Leal-Millan, 2010. "The role of cultural barriers in the relationship between open-mindedness and organizational innovation", *Journal of Organizational Change Management*, 23(4): 360-376.
- Hodge, B., W. Anthony, L. Gales, 1996. *Organizational Theory: A strategic approach*. Upper Saddle River, NJ: Prentice Hall, Inc.
- Jansen, J.J.P., F.A.J. Bosch, van den, H.W. Volberda, 2006. "Exploratory innovation, xploitative innovation, and performance: Effects of organizational antecedents and environmental moderators", *Management Science*, 52(11): 1661-1674.
- Jarvenpaa, S.L., D.S. Staples, 2001. "Exploring perceptions of organizational ownership of information and expertise", *Journal of Management Information Systems*, 18(1): 151-183.
- Jen Shieh, C., I. Wang, 2010. A Study of the relationships between corporate core competence, management innovation and corporate culture. *International Journal of Organizational Innovation*, 2: 395-411.
- Johannessen, J.A., B. Olsen, G.T. Lumpkin, 2001. "Innovation as newness: What is new, how new, and new to whom?", *European Journal of Innovation Management*, 4(1): 20-31.
- Junarsin, E., 2009. "Managing Discontinuous Innovation", *International Management Review*, 5(1): 10-18.
- Kahane, L.H., 2008. *Regression Basics*, 2th ed. Sage Publications, Inc. USA.
- Kim, W.C., R. Maubroge, 1999. "Strategy, value Innovation, and The Knowledge Economy", *Sloan Management Review*, 40(3): 41-54.
- Knigt, K.E., 1976. "A Descriptive Model of Intra Firm Innovation Process", *Journal of Management*, 41(4): 478-496.
- Koutroumanis, D., G. Alexakis, 2009. "Organizational culture in the restaurant industry: Implications for change", *Journal of organizational culture communications and conflict*, 13(2): 45-53.
- Liao, S., W. Fei, C. Liu, 2008. "Relationships between knowledge inertia, organizational learning and organization innovation", *Technovation*, 28(4): 183-195.
- Linn, M., 2008. "Library Strategies Organizational culture: an Important Factor to Consider. The Bottom Line", *Managing Library Finances*, 21(3): 88-93.
- Liu, C., 2005. "An Empirical Study of The Construction of Measuring Model for Organizational Innovation in Taiwanese High-Tech Enterprises", *International Journal of Innovation Management*, 9(2): 241-257.
- March, J., H. Simon, 1958. *Organizations* (New York: John Wiley and Sons).
- Mavondo, F., M. Farrell, 2003. 'Cultural orientation: Its relationship with market orientation, innovation and organisational performance'. *Journal Management Decision*, 41(3): 241-249.
- Mavondo, F.T., J. Chimhanzi, J. Stewart, 2005. "Learning orientation and market orientation: Relationship with innovation, human resource practices and performance", *European Journal of Marketing*, 39(11): 1235-1263.
- McAleese, D., O. Hargie, 2004. "Five guiding principles of culture management: A synthesis of best practice", *Journal of Communication Management*, 9(2): 155-170.
- Mitchell, W., 2009. *Organization and Innovation: Organizational Strategies for Leading Discontinuous Change*, Duke University, the Fuqua School of Business.

- Mudrak, T., A.V. Wagenburg, E. Wubben, 2004. "Assessing the Innovative Ability of FM Teams: a Review", *Facilities*, 22(11/12): 290-295.
- Obenchain, A.M., 2002. Organization culture and organizational innovation in not-for-profit, private and public institutions of Higher Education, The Dissertation of Doctor's Degree, Business administration, Alabama University, United States.
- Obenchain, A.M., W.C. Johnson, P.A. Dion, 2004. "Institutional Types, organizational Cultures, and Innovation in Christian Colleges and Universities", *Source: Christian Higher Education*, 3(1): 15-39.
- Perri, 1993. "Innovation by non-profit organizations: Policy and research issues" *Nonprofit Management and Leadership*, 3(4): 397-414.
- Prajogo, D.I., C.M. McDermott, 2005. "The relationship between total quality management practices and organizational culture", *International Journal of Operations & Production Management*, 25(11): 1101-1122.
- Quinn, R.E., G.M. Spreitzer, 1991. "The psychometrics of the competing values culture instrument and an analysis of the impact of organizational culture on quality of life", *Research in Organizational Change and Development*, 5: 115-142.
- Ravichandran, T., 2000. "Swiftness and intensity of administrative innovation adoption: An empirical study of TQM in information systems", *Decision Sciences*, 31(3): 691-724.
- Revati, S., 2005. A Multivariate Study of the Relationship between Organizational Learning Organizational Innovation and Organizational Climate in the Australian Hotel Industry, The Dissertation of Doctor's Degree, Philosophy, Swinburne University of Technology, Australia.
- Robbins, S., 2003. *Organizational Behavior*. Upper Saddle River. New Jersey: Prentice Hall.
- Rowley, J., A. Baregheh, S. Sambrook, 2011. "Towards an innovation-type mapping tool", *Journal Management Decision*, 49(1): 73-86.
- Schlegelmilch, B.B., A. Diamantopoulos, P. Kreuz, 2003. "Strategic innovation: The construct, its drivers, and its strategic outcomes", *Journal of strategic Marketing*, 11: 117-132.
- Scott, T., R. Mannion, H. Davies, M. Marshall, 2003. "The quantitative measurement of organizational culture in health care: A review of the available instruments", *Health Services Research*, 38(3): 923-945.
- Shepstone, C., L. Currie, 2008. "Transforming the Academic Library: Creating an Organizational Culture that Fosters Staff Success", *the Journal of Academic Librarianship*, 34(4): 358-368.
- Shinn, J., 1996. The Effects of Executive Leadership on Organizational Innovation in Nonprofit Human Service Organizations. Unpublished doctoral dissertation. The University of Pittsburgh, Pittsburgh.
- Siguaw, J.A., P.M. Simpson, C.A. Enz, 2006., "Conceptualizing innovation orientation: a framework for study and integration of innovation research", *Journal of Product Innovation Management*, 23(6): 556-574.
- Sims, R.R., 2000. "Changing an organization's Culture Under New Leadership", *Journal of Business Ethics*. 25(1): 65-78.
- Singh, S.K., 2011. "Organizational Innovation as Competitive Advantage during Global Recession", *the Indian Journal of Industrial Relations*, 46(4): 713-725.
- Tan, C.L., A.M. Nasurdin, 2006. "Human Resource Management Practices and Organizational Innovation: Assessing the Mediating Role of Knowledge Management Effectiveness", *Journal of Knowledge Management*, 9(2): 155-167.
- Tuan, L.T., S. Venkatesh, 2010. "Organizational Culture and Technological Innovation Adoption in Private Hospitals", *International Business Research*, 3(3): 144-153.
- Valencia, J.C.N., R.S. Valle, D.J. Jimenez, 2010. "Organizational culture as determinant of product innovation", *European Journal of Innovation Management*, 13(4): 466-480.
- Van de Ven, A.H., 1986. "Central Problems in the Management of Innovation", *Management Science*, 32(5): 590-607.
- Vasconcellos, E., M.A. Bruno, M.A. Campanario, S.L. Noffs, 2009. "A new graphic format to facilitate the understanding of technological innovation models: the seesaw of competitiveness", *Technology Analysis & Strategic Management*, 21(5): 565-582.
- von Thaden, T.L., H. Zhang, D.A. Wiegmann, S. Gunjan, A.A. Mitchell, 2002. *Safety culture: A concept in chaos*. Retrieved 18 Sep 2009 from UIUC.
- West, M.A., J.L. Farr, 1990. Innovation and creativity at work: Psychological and organizational strategies, (pp: 3-13) Chichester: John Wiley & Sons, Ltd.
- Wilson, A.M., 2001. "Understanding organizational culture and the implication for corporate marketing", *European Journal of Marketing*, 35(3/4): 353-367.
- Yin, R.K., 2003. *Case study research: Design and methods* (3rd ed). Thousand Oaks, CA: Sage.