A DISCUSSION ON ANTECEDENTS OF THE ADOPTION OF NEW MANAGEMENT TECHNIQUES BY HIGHER EDUCATION INSTITUTIONS[1]

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Abstract

There is extensive literature on the adoption of new management techniques in organizations. However, these studies have largely focused on industrial organizations. It is unknown whether or not the antecedents of the decision to implement new management techniques in industrial organizations are valid for educational organizations. Therefore, ***the main aim of***

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this study *was to discuss the triggers of the adoption of management techniques in the context of educational organizations. Furthermore, some propositions will be presented by the authors after discussions.*

Keywords: *Adoption of new management techniques, innovation, higher education institutions.*

Clasificare JEL: *I23, I29, O30.*

1. Introduction

It would not be wrong to claim that one of the most popular subfields in management and organization studies is the adoption of new management techniques by organizations. In this field, there are many studies that focus on actors such as business schools and their scholars (Braam *et al.,* 2007; Clark, 2004a, 2004b; Üsdiken & Çetin, 1999), media organizations and publishers (Ax & Bjornenak, 2005; Clark, 2004b; Frenkel, 2005), management consulting firms (Braam *et al.,* 2007; Capone *et al.,* 1980; Clark, 2004a; Crucini & Kipping, 2001; Özen, 2009), management gurus (Braam *et al.,* 2007; Clark, 2004a, 2004b; Özen, 1999), professional managers and MNCs (Capon *et al.,* 1980; Özen, 2002; Özen & Berkman, 2007; Wasti, 1998) who can affect the decision to adopt "New Management Techniques (NMT)" in organizations through persuasion and facilitation of the diffusion of management techniques among organizations. Except for professional managers and MNCs, other actors are located on the supply side of the diffusion process of management techniques among organizations (Abrahamson, 1991; Ax & Bjornenak, 2005). In addition, many studies have examined the triggers (e.g. Braam *et al.,* Capon *et al.,* 1980; Damanpour & Schneider, 2006) and consequences (e.g. Capon *et al.,* 1980) of the adoption of NMTs by organizations.

On the other hand, these studies have been based on industrial organizations to a large extent (e.g. Ax & Bjornenak; Capon *et al.,* 1980). In addition, studies that are related to the service sector have generally focussed on health organizations (e.g. Batra & Pall, 2015; Castle & Banaszak-Holl, 1997; Kimberly, 1978; Kimberly & Evanisco, 1981; Knudsen *et al.,* 2005; Rye & Kimberly, 2007; Walston *et al.,* 2001). However, there are relatively few studies about educational organizations (e.g. Birnbaum, 2000; Eryılmaz *et al.,* 2016a, 2016b) and these studies seem to have largely focussed on the consequences of the adoption of NMTs by higher education institutions. Therefore, there can be considered to be a theoretical gap in the literature. As a consequence, ***the aim of this study*** was to discuss the antecedents of adoption of NMTs in the context of higher education institutions. Some propositions will be presented with the support of various literature in respect of adoption of innovations, management fad/fashions, diffusion of innovations etc.

2. Antecedents of the Adoption of NMTs in Higher Education Institutions

This study aimed to discuss the antecedents of the adoption of NMTs by higher education institutions. At this point, a clarification of "new" seems to be appropriate. There are some different opinions in the literature as to when a management technique becomes "new" or "innovative". For example, Mansfield (1963) accepts "new" or "innovative" as the first use of a product, service, knowledge etc. After the first use by an organization, every subsequent use is only an imitation in

terms of this view. On the other hand, Becker and Whisler (1967) defined "new" or "innovative" as the first use of something among similar organizations. Finally, according to the largest approach, only the perceptions of a related organization are enough to accept something as new (Dewar & Dutton, 1986; Rogers, 1995; Van de Ven, 1986). This study will be based on this latest approach to the concept of "new".

Another important concept is this study is "adoption". According to one view, the process of adoption has three sub processes of "initiation" (e.g. recognizing some needs, searching for alternative innovations), "adoption decision" (e.g. evaluating innovations from financial, technical and strategic perspectives, deciding to accept an innovation) and "implementation" (e.g. preparing the organization to use the innovation, trial use and then, continued use of the innovation)" (Damanpour & Schneider, 2006; Pierce & Delbecq, 1977). According to Damanpour and Schneider (2006), all related variables affect all the phases of the adoption process in the same direction. However, if it is still necessary to emphasize the main focus of the discussion, it can be said that this study largely focuses on the first two stages of the process. Thus, in this study, the adoption of NMTs refers to "initiation" and "adoption decision" to a large extent. At this point, three groups of factors, comprising the macro, organizational and individual level factors that may affect the adoption of NMTs will be examined below.

2.1. Macro level factors

Environment is a quite extensive concept. It may include geographical, societal and political conditions or global uniformity (Wejnert, 2002). From an organizational point of view, everything that is outside of the borders of an organization and affects a subpart of that organization is a part of environment of related organization (Daft, 1998). One of the macro level factors that forces organizations to adopt NMTs is pressures that are produced by the technical (task) environments of organizations. The technical environment is that which emphasizes the importance of competition, market and resources for organizational processes and performance (Oliver, 1997). Many elements that can be collected under technical environments can be a cause of adoption of NMTs in organizations. For example, Capon *et al.* (1980) found that some of the main reasons behind the adoption of strategic planning in organizations were intensive competition, radical changes and scarce resources in the markets. In a similar vein, technical environments exert pressures on higher education institutions to be efficient and effective (Birnbaum, 2000). Environment of higher education institutions all around the world are often conceptualized as turbulent and dynamic (Brookes & Becket, 2007). Both national and supranational forces are triggering changes within and across higher education institutions which give priority to quality management **(**Brookes & Becket, 2007). Also they are forced into more market-like situations characterized by increased competition for students, excellent staff and financial resources etc. (Ivy, 2001; Greiger, 2004). For example, Kraatz and Zajac (1996) indicated that colleges of liberal art changed their curricula in response to these pressures. Local and global technical environmental conditions are strong predictors of this change. The role of information technology in education is also emphasized in todays' educational environment (Hamidi *et al.,* 2011; Mamun *et al.,* 2015). It is discussed that technology based education is widespread at the higher education institutions of developed countries. Smart schools providing e-training and online learning are accepted among new education forms in the new period. It is also professed that higher education has a vital role in gaining competitive advantage at national level and so performance

matters. Amaral and Magalhães (2002) assert that higher education institutions make important contributions to national wealth and the performance of the nation in global economy. According to Hazelkorn (2011), the argument is very basic; nations endeavor to gain sustainable competitive advantage on the basis of innovation which is "fundamentally stored in human brains" (Castells, 1996: 5) which requires massive investments in educational capital. For example, Borahan and Ziarati (2002) state the strong relationship between a country's competitiveness and the quality of the higher education provided within that country. The Global Competitiveness Report 2016–2017 by World Economic Forum, also support this claim. In this report, higher education is considered as one of determinants of a country's competitiveness and quality of the higher education regarded as an efficiency enhancer of the country (The Global Competitiveness Report, 2016-2017). All these developments force nations and their educational institutions to adopt innovations. Therefore;

> *Proposition 1: Higher education institutions will have a greater tendency to adopt NMTs when they perceive more competitive pressure from their technical environments.*

On the other hand, institutional environments assess organizations with requirements and rules. Organizations must conform to these rules and requirements to gain legitimacy (Suchman, 1995) in the eyes of the dominant actors of institutional environments (Oliver, 1997). According to DiMaggio and Powell (1983), there are three different institutional pressures on organizations of coercive, normative and mimetic. Coercive pressures are used on organizations by other stronger organizations or the society in which the organization operates. Normative pressures largely stem from professionalism. Formal education and professional networks are two important mechanisms of normative isomorphism. Finally, mimetic pressures are related to "symbolic" uncertainty. When organizations perceive high symbolic uncertainty, they take some organizations as a model to gain legitimacy. Scott and Meyer (1994), view higher education institutions as "controlled and sustained primarily by institutional factors". According to them, higher education institutions gain legitimacy by conforming the widely shared cultural norms and beliefs and by meeting the requirements of regulatory structures (Scott & Meyer, 1994). In recent years, higher education institutions have faced with increasing external pressures aimed at institutional change. It is increasingly becoming an organizational global field where specific norms and ideals are created in order to gain legitimacy beyond national borders (Hazelkorn, 2011). In this respect, concepts such as 'adaptiveness', 'environmental awareness' and 'responsiveness' became important in the presence of internal stakeholders like students, academics, administrative personnel and external stakeholders like parents, employers, the state etc. At this point Amaral and Magalhães (2002) underline two issues about the expectations from higher education institutions; (1) to be useful (like being responsive to the real needs of the stakeholders and creating useful knowledge) and (2) to be legitimate (like having legitimate interests in the educational, social, cultural etc. issues). From a broader perspective, legitimacy of higher education institutions is determined by links with other actors and institutions (Gornitzka *et al.,* 2007, Olsen 2009). "New practices in higher education institutions not only emerge and are spread inside the institution as a result of reform enhanced structural changes and formalized management requirements, but also through the development within the university's academic community of collective regulatory

rules, norms and beliefs" (Fumasoli, *et al.,* 2014: 9). A number of scholars have argued the role of regulatory framework with new demands for accountability from higher education institutions (Christensen 2011; Enders *et al.,* 2013). In addition to this, national reforms aimed to modernize the universities and reach to a "world-class" or "excellent" level (Maassen & Stensakerin, 2015; Fumasoli, *et al.,* 2014) also creates a motivational setting to adopt new techniques. Accordingly, Maassen and Stensakerin, (2015) assert that knowledge intensive organizations in future will face even stronger demands for adopting new management models and ideas. There are some examples of institutional pressures for adoption on educational organizations. For example, Brookes and Becket (2007) attract the attentions to the introduction of quality management techniques in higher education that is an externally stimulated process related to political, economic and socio-cultural forces and enhanced expectations for accountability and efficiency in the sector. In a similar vein, according to findings of some studies in the Turkish context (Eryılmaz 2004, 2011), one of the variables that explain the diffusion of "Total Quality Management" and "Multiple Intelligence Theory (MIT)" among the Turkish primary schools is the pressure that exerted by a dominant actor, the Ministry of Education. These arguments suggest that,

> *Proposition 2: Higher education institutions will have a greater tendency to adopt NMTs when they perceive more coercive, normative and mimetic pressures from their institutional environments.*

Another vital factor in the adoption of NMTs is national culture. There are some studies in the literature about the effects of national culture on the individuals' psychological and behavioral outcomes at different levels (Lim & Park, 2013) and adoption behavior of organizations (e.g. Lee *et al.,* 2013). According to Sturdy, (2004), the methods through which new ideas are presented and learned are thought as culture-specific and local culture can play a role as a bridge or a barrier to adoption. Hence it is discussed that decision on the adoption of innovation may differ among cultures since different dimensions of national culture are linked with various innovative activities and contents (Hoffman & Heagrty, 1993). For example, one such study revealed that national culture has significant effects on the adoption of "Enterprise Resource Planning (ERP)" (van Everdingen & Waarts, 2003). In a similar manner, Sundqvist *et al.* (2005) indicated that the conformity level of an innovation to a national culture predicts the speed of adoption of innovation in the related country. There is also some evidence that national culture affects the adoption of innovations by higher education institutions in the related country. For example, it was found that the dimensions of national level culture such as "individualism", "uncertainty avoidance" and "power distance" have some critical effects on the adoption of integrated curricula in medical schools (Jippes & Majoor, 2011). Thus,

> *Proposition 3: Higher education institutions will have a greater tendency to adopt NMTs when they perceive NMTs as consistent with their national culture.*

2.2. Organizational level factors

The first predictor of the adoption of NMTs at the organizational level is organizational age. Scholars have argued that as organizations move through various stages of development and

life curve, they face differing problems which concluding in the requirement for several skills of management, managerial priorities and structural configurations (Kazanjian, 1988; Kimberly & Miles, 1980; Mitchell & Summer, 1985). Early studies assert that young organizations are more likely to confront barriers to innovations because of low expertise, scarcity of financial resources (e.g. Schoonhoven *et al.*, 1990; Tripas, 1997). In this vein, Kimberly and Evanisco (1981) indicated that when organizations become older, the possibility of adoption of technological innovations increases. In parallel with the previous findings, Eryılmaz *et al.* (2016a) showed that the biggest difficulty for Turkish higher education institutions during the adoption of quality management is organizational youth. Therefore,

Proposition 4: Higher education institutions will have a greater tendency to adopt NMTs when they become older.

The other factor at the organizational level is organizational size. In related literature it is discussed that, larger organizations tend to be associated with greater differentiation (Blau & Shoenherr, 1975), high degrees of the formalization (Pugh *et.al.*, 1968; Kimberly and Evanisco, 1981) and the complexity (Kimberly & Evanisco, 1981; Haveman, 1994), the more decentralized managerial decision-making authority (Hage *et al.*, 1960), the greater task specialization (Blau, 1970). It is also mentioned that larger organizations confront with a broad range of difficulties like dealing with a greater number of competitors than smaller ones (Kimberley & Evanisko, 1981) and to cope with these difficulties, they are more likely to tend to adopt NMTs (Mol & Birkinshaw, 2009). Therefore, these characteristics may influence the situations in which organizations adopt NMTs to solve some problems. For example, Capon *et al.* (1980) argued that larger organizations are more willing to adopt NMTs. Early works such as Hannah and McDowell (1984), Noteboom, (1993), Saloner and Shepard (1995) indicated that size of an organization shows a significant and positive impact upon the adoption decision of management techniques. According to these studies; size of organizations has positive impacts on organizations' capability to adopt innovations, partly since large organizations have manifold facilities that contribute to the adoption and wider competencies to benefit from the innovative activity like more financial resources, expertise knowledge on management practices and also human capital (Mol & Birkinshaw, 2009). These studies show that while small organizations lag behind in the adoption of new techniques, larger organizations are often have accumulated knowledge that allow them to make use of opportunities of innovations better than smaller ones. For example Hannah and McDowell (1984) found that larger banks have a stronger prone to adopt new technologies. In a similar vein, Damanpour and Schneider (2006) indicated that organizational size is a predictor of the adoption of innovations in public organizations. Batra and Pall (2015) also revealed that the decision to adopt hospital information systems was predicted by the number of employees in the related organization. Finally, the findings of a qualitative study showed that the second most important obstacle to the adoption of quality management in Turkish higher education institutions was the competence of the administrative and academic staff (Eryılmaz *et al.*, 2016a). This reasoning suggests that,

Proposition 5: Higher education institutions will have a greater tendency to adopt NMTs when they become larger.

Another possible factor that can affect the decision to adopt NMTs by organizations is the degree of internationalization. As the geographic scopes of organizations expand, they confront with numerous and larger competitors. As a result, they are forced to observe, follow and mimic NMTs in order to stay in the competition (Mol & Birkinshaw, 2009). So, participation in international arenas acts a source of insight for management innovations since it exposes firms to a much broader set of NMTs in different contexts (Kogut & Parkinson, 1993). For example, Capon *et al.* (1980) claimed that international organizations are more predisposed to adopt NMTs than national ones. Internationalization has also taken a primacy for higher education institutions as well. Now, they experience competition for students and academicians which are regarded as important dynamics of the globalization in higher education. Higher education institutions' skills about catching of talent and producing of tacit knowledge transformed into a vital sign of a nation's capacity to embrace with global science and economy (Hazelkorn, 2011). For example, the Bologna initiative aims to smooth international mobility and augment competition for the lucrative international student market by focusing on restructuring of educational systems (Cemmell & Bekhradnia, 2008) Similarly, Eryılmaz *et al.* (2016a) found that a benefit of having a quality certification for Turkish higher education institutions was to be able to establish some collaboration with other universities abroad. Therefore, it is fair to say that there seems to be a two-way relationship between becoming international and the adoption of NMTs. These arguments suggest that,

Proposition 6: The adoption rates of NMTS by higher education institutions will be affected by their levels of internationalization.

Proposition 7: Internationalization levels of higher education institutions will be affected by the adoption of NMTs by the higher education institutions.

Organizational structure is another possible organizational level factor that can have an impact on the decision to adopt NMTs by organizations. "Organizational structure refers to the decision of labor as well as the patterns of coordination, communication, work flow, and formal power that direct organizational activities" (McShane & Von Glinow, 2003: 506). One of the most important predictors of innovation is the complexity dimension of the organizational structure (Baldridge & Burnham, 1975; Damanpour & Schneider, 2006). Complexity is related to the number of activities or subsystems within an organization (Daft, 1998). It is often expected that there is a positive association between the complexity level of an organization and the adoption of innovation since when organizations become more complex, they will have easier access to different innovation. It is assumed that the most complex organizations should have require much to comply with different battlefronts and thus, these organizations are often the quickest during adoption of innovations (Baldridge & Burnham, 1975; Damanpour & Schneider, 2006; Hodge & Anthony, 1991; Pierce & Delbecq, 1977). For instance, Baldridge and Burnham (1975) asserted that a functionally differentiated organizations permit specialized expertise in subunits and because of different problems that demand solution. Additionally, an organization that is differentiated in a functional manner has larger numbers of functional units. It means enhanced problems of coordination and control. As a result, this condition may increase the need for administrative innovations to augment coordination. Thus, coalitions of specialists in differentiated subunits of

complex organizations enhance the depth of knowledge base which in augments the development and adoption of new ideas (Aiken & Hage, 1971). For example, number of studies conducted in health sector show that adoption of innovation is predicted by organizational complexity in a strong and significant way (e.g. Alexander *et al.,* 1996; Ginn & Young; 1992; Glandon & Counter, 1995; Sanders, 2007). In similar vein, when a university has a business school, it will have a greater awareness of NMTs possibly than a university without a business school. Therefore,

Proposition 8: Higher education institutions will have a greater tendency to adopt NMTs when they become more complex.

Centralization is another important dimension of organizational structure. Centralization is related to the behavior in organizations which specifies whether decisions are made by top management or not. If the decisions are made by employees at different levels of the hierarchy in an organization, this is a highly decentralized organization (Cunliffe, 2008). There have been discussions on the direction of the relationship between the level of centralization and innovation. It is emphasized that as innovation adoption process is professed bargaining sometimes, in the case of centralization is decreased; reaching a consensus will be more difficult. It has been argued in various studies (e.g. Normann, 1971) that centralization enables adoption of radical innovation since more condensed power is required to overcome effects of these types of changes. On the other hand, there are studies (e.g. Hage & Aiken, 1967; Moch & Morse, 1977) which have argued that there is a negative relationship between the two variables. For instance, Kimberly and Evanisco (1981) found a negative correlation between centralization and the adoption of innovation. They assert that the more decentralized hospitals had greater prone to adopt technical innovations. Similarly, Hage and Aiken (1970) found a positive relationship between the rate of successfully adopted innovations and decentralization. Therefore, it can be expected that when top management of universities let other administrators make decisions, the rate of adoption of NMTs will be increased. As a result, a positive relationship between these variables can be assumed. Thus,

Proposition 9: Higher education institutions will have a greater tendency to adopt NMTs when they become less centralized.

Another possible factor that can affect adoption of NMTs by organizations is external communication. Information plays an important role in the process of the adoption of innovation by organizations (Rogers & Shoemaker, 1971). There are some results of a number of studies of the adoption behavior of individuals which indicate that persons who are well integrated into social and/or professional networks tend to be more likely to respond to changes in their environments (i.e., adopt innovations) than their less well-integrated counterparts (Burt, 1973; Coleman *et al.,* 1966; Kimberly, 1978). The evidence of various studies shows that external networks have a strong influence on the adoption of innovations. According to Damanpour & Schneider (2006), external communication also informs managers for choosing recommend opinions, and prepares members of organizations to approve the innovation and help for assimilation of it into organizational practices and routines. Also, a meta-analysis conducted by Damanpour (1991) showed a significant positive relationship between two variables such as external networks and adoption of administrative innovations. Other studies have investigated the impact of external networks on

adoption of innovations in health sector. For example, Wheeler *et al.* (1999) indicated that the adoption of innovation is predicted by membership of multihospital system in a significant and positive way. Finally, Trinh and Begun (1999) showed that being a member of a network system is a positive precursor of strategy adoption. These argument suggest that,

Proposition 10: Higher education institutions will have a greater tendency to adopt NMT when they have greater level of external communication.

2.3. Individual level factors

There are some evidences about that organizational leaders have a great impact on organizational innovations (Becker, 1970; Hage & Dewar 1973). Top administrators often function as a bridge between the organization and their environments. Thus, they are often exposed to new ideas (Daft, 1978). There are some individual (managerial or administrator) level factors such as age, gender, tenure, education level, etc. that may predict the behavior of adoption in organizations. For example, many higher education institution administrators in a previous study pronounced that quality management efforts in their units started with the vision of the leaders of their universities (rectors). Of the participants in the study, 32% stated that the first reason for obtaining quality certification was the request of senior leaders (Eryılmaz *et al.*, 2016a). Then, some individual characteristics of managers/administrators should affect the adoption of NMTs in the higher education institutions. According to the literature, the adoption of new things often includes a great amount of risk. May be, since younger people can bring better cognitive resources into decision-making processes (Bantel & Jackson, 1989), younger people are more inclined to take these risks (Damanpour & Schneider, 2006). It is argued that older managers/administrators whose cognitive frames prone to reflect more traditional approaches are tightly connected to existing organizational routines and status quo which make them less willing to adopt new practices and major organizational changes (Huber *et al.*, 1993; Young *et al.*, 2009). Thus, younger managers tend to be more flexible from a cognitive standpoint in adapting to new ideas and practices which make them more familiar with current managerial trends and new ideas (Heyden, *et al.*, 2015). This reasoning suggests that,

Proposition 11: Higher education institutions will have a greater tendency to adopt NMTs when their top management teams include a higher proportion of young managers/administrators.

Furthermore, there are some studies in the literature that investigate the relationship between gender and innovativeness. For instance, early studies found that female managers tend to evaluate themselves lower than men do on being innovative and entrepreneurial (DiTomaso & Farris, 1992; Fox & Schuhmann, 1999). The basic premise of this argument was that male managers' propensity to take risks is higher when it is compared to their female counterparts. It is asserted that male managers are more open to innovations because they are more eager to leave the current situation and would more easily make a decision to adopt NMTs and endow resources to them (Young et *al.*, 2009; Heyden *et al.*, 2015). The limited literature on the relationship between gender and the adoption of innovations presents mixed results. For example, an empirical study found that the gender of individuals had no impact on the adoption of agricultural

innovations in Ghana (Doss & Morris, 2001). On the other hand, Buabeng-Andoh (2012) claimed, with the support of previous literature, that male teachers were more willing to adopt information and communication technologies than their female counterparts. As a result, the evidence of a relationship between gender and the adoption of new things seems stronger than the evidence of the counter literature. Thus,

Proposition 12: The Higher education institutions will have a greater tendency to adopt NMTs when their top management teams include a higher proportion of male managers/administrators.

In addition, there seem to be some relationships between the educational level of individuals in the top management of organizations and the adoption of NMTs. In related literature it is argued that well informed managers are more likely to use complex and miscellaneous approaches for decision making and problem solving. Also they tend to have wider interpretations and more efficient information-processing capabilities, a more sophisticated ability to cope with complexity. It is also asserted that education creates aptness to new ideas and innovations which play an important role in coping with environmental complexity, discovering the requirement for innovation and preparing a desirable environment for its implementation (Damanpour & Schneider 2006; Heyden, *et.al.,* 2015). Also it is discussed that well informed managers may be more successful in detecting innovations from the series of ideas to which managers are exposed (Young, *et al.,* 2009). For example, it was reported in a previous study that administrative and technical innovations were predicted significantly by educational level of administrators in the context of health organizations (Kimberly & Evanisco, 1981). Consistent with those findings, Castle and Banaszak-Holl (1997) showed that organizations that have well informed top management teams were more willing to adopt innovations. This reasoning suggests that,

Proposition 13: Higher education institutions will have a greater tendency to adopt NMTs when individuals in their top management teams have a higher average education level.

Finally, as the last individual factor discussed in this study, job tenure have conflicting theoretical stands about its impact on a top manager's attitude towards change and innovation. The first view is that enhanced tenure directs top managers to become stable and resistant to changes in order to fulfill obligations to existing organizational constituencies and thus, job tenure is negatively associated with adoption of innovations (Boeker, 1997; Wisdom *et al.,* 2014). On the other hand, it is argued that top managers with long tenure are better able to handle the cultural and socio-political drawbacks that are associated with the adoption of an innovation (e.g. Meyer & Goes, 1988; Kimberly and Evanisko, 1981). As consistent with the second stream, Kimberly and Evanisco (1981) found in their empirical studies that the variable of adoption of technologic innovations is predicted by tenure of hospital administrators. In a similar vein, Castle and Banaszak-Holl (1997) found that organizations that have longer tenured top management teams are more prone to adopt innovations. Therefore,

Proposition 14: Higher education institutions will have a greater tendency to adopt NMTs when individuals in their top management teams have a longer average tenure.

3. Conclusion

In this study, the relationships were examined between the three factor groups of macro (environmental), organizational and individual level, and the adoption of NMTs in the context of higher education institutions. A possible ***originality*** of this study is that there is only a limited number of studies in the literature presenting these discussions in the context of higher education institutions. Some propositions have also been made. In ***future studies***, these propositions could be transformed into hypotheses and they could be tested statistically in the contexts of developed and developing countries.

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