An Examination of Open and Technology Leadership in Managerial Practices of Education System

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ABSTRACT

In order for a smooth and problem-free transformation to take place in a digitalizing education system, efficient management is needed. Thus, educational managers need to improve their skills and develop behaviors suitable for taking education systems into the digital age. Social networks enable leaders to become digital citizens by embracing and implementing "Open Leadership". Acceptance of technology and self-efficacy in technological leadership are both seen as factors that can have positive or negative influences on the new leadership styles. This study aims to investigate the relationship between open leadership, digital citizenship, technology acceptance and self-efficacy in technological leadership. Working with a group of 153 education managers, the research was conducted using a relational screening model. Following multiple regression analyses, it was found that technology acceptance and self-efficacy in technological leadership positively influences digital citizenship at medium level and that self-efficacy in technological leadership and digital citizenship positively influences open leadership.

Keywords: digital citizenship, managerial practices, open leadership, technology

INTRODUCTION

The opportunities offered by technology in the information age are having a profound influence on communities worldwide. The digital age has led to immense lifestyle changes and all fields of professional and academic endeavor have been affected (Czerniewicz & Brown, 2014).

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At the outset, information and communication technologies were regarded as tools needed by students to assist them in their future lives. However, the technologies have also become a major tool for both teaching and learning (Mitchell & DeLange, 2013). Educational processes are increasingly supported through the use of palmtop computers, mobile phones and tablets (Corlett et al., 2005), and this digitalizing of education has gained strategic significance in terms of individualizing learning by enabling sensitivity to the learning pace, style and needs of individual learners. More and more studies are now devoted to the use of tablets and social networks together with the emergence of a new digital learner generation. (Yang, et.al, 2016). It is better for educators to understand the concepts, such as global citizenship, education for sustainable development, human rights, the promotion of a culture of peace and digital citizenship that will shape children's lives in their development and prepare them for the 21st century. (Bennett et.al, 2016)

Social networks and education

Social networking sites are defined as web-based services in which users connected in the system are listed and information about them is open or partly-open to other users. Information can then be inputted and shared according to specified limits (Boyd & Ellison, 2007). This shared information is known as social content. Photos, audio files, web addresses, video clips, presentations, event announcements and other media types can be given as examples of social content (Conole & Culver, 2010). It is also possible to use such content for educational purposes.

The benefits of social networks for students, academics and institutions in higher education in terms of enriching teaching and learning experiences have been discussed widely. According to researchers, social networks improve communication skills, expand participation and social commitment, foster peer support, and enable cooperative learning (Blackey & Chew, 2009).

The new technologies have been seen by some commentators as effective problem solvers of the educational institutions. For Demirel and Dagyar (2016), students gain effective skills for problem-solving through different research and experiences in the education field.

Until recently, studies have tended to focus on the physical teaching dimension within schools and classrooms and then on the effects of social networks on students and teachers. However, it is important to note that these products of Web 2.0 technology are also an important management tool. It is essential therefore also to consider the concept of "Open Leadership", and management that incorporates the features of social networks and uses them as a basis for institutional development (Li, 2010).

Integrating social network technologies into managerial processes such as information sharing, communication, decision-making, planning, organizing, supervision, and more besides will contribute to both establishing a participatory culture in educational organizations, and to more efficient use of information age technologies. "Open leadership", as noted, is a key concept in this discussion since open leaders are leader managers who are unreserved about forming various relational networks based on trust between their employers and themselves, including using social network tools in order to achieve their goals (Li, 2010).

Open leadership

Open leadership is a new type of leadership rising from the development of Web 2.0 technologies and social networks. Open leadership requires being more open in management processes. It is evident that people have the desire and ability to access information more easily and more quickly these days. Hence, their desire to know what managers and leaders are doing is stronger than ever (Li, 2010). Ignoring this may lead to inefficiency in management processes. On the other hand, adapting management processes to the digital age could yield considerable advantages. As Bush et al. (2011) noted, "effective leadership and management are vital if schools are to be successful in providing good learning opportunities for students, and emerging evidence (shows) that high quality leadership makes a significant difference to school improvement and learning outcomes"

Li (2010) describes open leadership as a type of leadership that establishes a context of trust, is sharing, and transparent, and prepared in the digital age to build success without necessarily being constantly 'in charge'. Today's leaders need to be more open in order to survive and thrive, and for this to happen, a more secure information sharing culture should be formed. In addition to involving meanings such as authenticity, honesty, trust, and fairness, transparency is also related to making visible not only information, but also information processes. It involves sharing what is both done and said with regard to goals, opportunities, threats and difficulties.

Leader managers who follow an open leadership philosophy will be those who accept that inter-personal relationship processes in today's world have changed to "watching, sharing, commenting, producing, organizing and supervising" (social network-based communication model) and will be focused on managing this change efficiently in their organizations (Li, 2010). Managers who possess open leadership qualities will therefore use technology efficiently to realize the above mentioned possibilities. Furthermore, open

leadership is a type of leadership that will assist digital citizens to develop their own self-efficacy in technology. Thus, open leadership should not be considered in isolation and must be accompanied by a discussion of concepts such as technology acceptance, self-efficacy in technological leadership and digital citizenship, all of which have major influences on the rise of open leadership.

Acceptance of technology

In today's digital age, there is an immense need for people who can follow updated technologies, process information quickly, and use and share it efficiently (Fırat, 2010). The first necessity in developing these qualities is to accept technology, because people resist or react to changes that they think they do not know or cannot use (Çelik & Bindak, 2005). It is vital for any organization to predict and proactively counteract such reactions and resistance.

The Technology Acceptance Model (TAM) is a theory that measures the willingness and intentions of computer technologies and user audiences in large organizations (Davis, 1989). TAM has received much criticism due to its limited nature and researchers have suggested that more factors should be added to increase its explanatory power (Legris et al., 2003). However, TAM has earned its place in Management Information System literature as the most powerful and most widely used theory based on behavioral theories regarding the acceptance of new technologies at individual level. TAM argues that users' acceptance of technology is shaped under the influence of two basic dimensions - perceived ease of use and perceived usefulness.

Perceived ease of use and perceived usefulness: Perceived ease of use and perceived usefulness are the two factors that determine the intentions of individuals regarding computer use (Davis, 1989). The success and adequacy of these two factors in measuring personal intentions regarding the use of computer systems have been proved by many researchers (Legris et al., 2003). Perceived usefulness is defined by Davis (1989) as expressing the intentions and opinions of individuals regarding the effect of technology on their performance at work; perceived ease of use refers to the ease of use of a technology and learning how to use it without much effort (Davis, 1989). Cheng Yao's studies (2008) agreed that computers provide a visual representation, the 3D shapes, which helps students to better understand more of what was going on. Perceived usefulness is related to the performance increase that results from the use of technology by an individual while doing certain tasks or solving certain problems (Keller, 2005).

Technology leadership and self-efficacy

The skills that should be possessed by administrators in terms of technological leadership are defined by various international associations under "education technology standards". The ISTE (International Society for Technology in Education), based in the United States of America, published NETS-A (National Educational Technology Standards

for Administrators) as education technology standards for administrators. These standards define the knowledge and skills that should be possessed by educational administrators in order to be efficient leaders in technology implementation. The ISTE first produced NETS-A in 2002 and then improved these standards in 2009. The 2002 ISTE technological leadership standards are grouped under 6 headings. These are: Leadership and Vision; Learning and Teaching; Productivity and Professional Practice; Support; Management and Operations; Evaluation; Social, Legal and Ethical Issues. The technological leadership standards that were re-considered by ISTE in 2009 were put into five groups, namely: Visionary Leadership; Digital Learning Culture; Perfection in Professional Practice; Systematic Development, and Digital Citizenship (Yu & Durrington, 2006). The characteristics that should be displayed by a technological leader are further explained as follows (Hacıfazlıoğlu et al., 2010): visionary leadership, learning culture in digital age, perfectionism in professional practice, systematic development, digital citizenship.

These qualities were subsequently proposed by Hacıfazlıoğlu, Karadeniz and Dalgıç (2011) as the determining features of self-efficacy in technological leadership. The concept of self-efficacy arises in the process of determining and evaluating administrators' technological adequacy. Self-efficacy originated with Bandura's (1977) social learning theory and it is still significant in today's world. According to this theory, the reason for an individual being successful in a certain field is the sense of efficacy s/he feels in that area (Bandura, 1997). Self-efficacy is defined as the belief that an individual has in starting and finishing an action that will successfully influence the relevant environments. In this regard, it is necessary for administrators to gain and develop certain competencies in order to develop awareness and pursue their responsibilities as technological leaders (Anderson & Dexter, 2005). The individuals who acquire these competencies will be able to reflect these qualities in all aspects of their lives, which leads naturally to the concept of digital citizenship.

Digital citizenship

Mossberger, Tolbert and McNeal (2007) define digital citizens as citizens who know: how to use technology and the digital tools entering our lives in the correct way; respect ethical rules and people's rights in the digital arena; and use these tools with an awareness of safety. Digital citizenship, in short, is described as the behavioral norms for the responsible use of technology (Ribble, 2007).

Digital citizenship is the acquisition of a very comprehensive set of behaviors. Ribble (2011) suggests that such behaviors include knowledge and mastery of digital literacy; digital ethics; digital communication; digital security; digital commerce; digital interaction; digital rights and responsibilities; digital law; and digital health. Digital citizenship consists of comprehensive behavior acquisition demonstrating that regular citizenship behaviors have been fully integrated into the digital world.

The digital citizenship literature offers a number of suggestions for students, educators and market representatives for the conscious and correct use of online

technologies and digital platforms in the context of the technological needs of primary and secondary level students. However, digital citizenship should not be looked at considering only the young generation (digital locals), but additionally considered in relation to the behaviors that should be acquired by those moving to technology in later life (digital migrants) and those who recently started using technology. Prensky defines digital locals as people who were born in the 1980s and after, while digital migrants consist of those generations who encountered the digital world later in life (Prensky, 2001).

Digital citizenship behaviors are the behaviors that need to be acquired by educational administrators in order to manage digital age children and raise them safely without compromising ethical values. This is why, it is so important for the administrators themselves to acquire the required competencies.

Since teachers and students use technology intensively as education is digitalized, it is not possible for administrators to remain remote from these developments or maintain traditional education management styles. For this reason, administrators should quickly integrate technology into their management processes as 21st century communication tools rapidly develop and distribute information. Hence this research hopes to shed light on the steps to follow in order to implement open leadership in the digital education management process and reveal the relationship between open leadership, digital citizenship and its influencing factors such as technology acceptance and self-efficacy in technological leadership.

In this regard, the questions that shape this research are as follows:

1. What is the level of relationship between self-efficacy in technological leadership, technology acceptance and digital citizenship?
2. What is the level of the relationship between digital citizenship, self-efficacy in technological leadership and open leadership?

This study contributes to the educational literature by examining the indicators of open leadership in this context, which are digital citizenship, technology acceptance, and self-efficacy in technological leadership.

MATERIALS AND METHOD

This study was conducted with educational administrators as part of a PhD study in the 2014-2015 academic year. The total number of participants was 153. The data was collected using the open leadership scale, technology acceptance scale and self-efficacy in technological leadership scale and analyzed using the SPSS 22 statistical software. The open leadership scale was developed as part of the PhD study and its Cronbach's Alpha value is 0,92. The digital citizenship scale used by Akcil (2015), had found Cronbach alpha value as 0,88. The Cronbach's Alpha value of the self-efficacy in technological leadership scale is 0,97

(Hacıfazlıoğlu et al., 2011). The scale includes the technological leadership standards developed for education managers (NETS-A) by ISTE (2009) (International Society for Technology in Education). The technology acceptance scale was developed by Davis (1989) and is a model that aims to reveal how users accept and use technology. The validity and reliability of this scale was recently re-analyzed and Cronbach's Alpha value was found to be 0,80 (Cuhadar, 2012). The collected data was also analyzed via multiple regression analysis as one of the relational statistical methods.

RESULTS

The relationship between digital citizenship, self-efficacy in technological leadership, technological acceptance and open leadership was analyzed through multiple regression analysis. Firstly, two models were formed: Model 1 is the effect of technology acceptance and self-efficacy in technological leadership on digital citizenship; Model 2 is the effect of digital citizenship on technology acceptance and self-efficacy in technological leadership.

Table 1: *Findings regarding the relation between self-efficacy in technological leadership, acceptance of technology and digital citizenship*

Variable	B	β	T	P	Binary r	Tolerance	VIF
Fixed	5,617		,503	,616			
Technology acceptance	1,687	,574	6,261	,000	,674	,573	1,745
Self-efficacy in technological leadership	,805	,407	4,057	,000	,616	,573	1,745
R= ,713 R²= ,510 F=77,547 p=,000							

Model 1

As can be seen from the **table 1**, the effects of self-efficacy in technological leadership and technology acceptance on digital citizenship is at medium level and is meaningful (R=,713, R²=,510, p=,000, p<,05). According to this finding, it can be seen that there is a positive and medium level (r=,674) relation between digital citizenship and self-efficacy in technology acceptance, similar to the positive and medium level (r=,616) relation between digital citizenship and self-efficacy in technological leadership. When the normality and linearity assumptions of this relation are examined, it is seen that the result is positive. According to this finding, it is revealed that technology acceptance and self-efficacy in

technological leadership have an effect on digital citizenship which can be considered as significant. Thus, technology acceptance and self-efficacy in technological leadership, both individually and together, have an important influence in forming digital citizenship behavior. The relation diagram resulting from this finding is as shown in **Figure 1**, below:
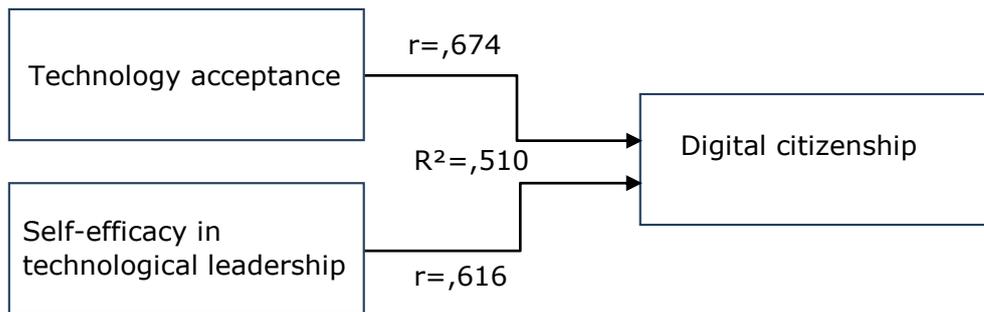

Figure 1*: Relationship model for digital citizenship, self-efficacy in technological leadership and technology acceptance.*

Model 2

No meaningful relation was found between technology acceptance and open leadership in the 2nd Model (p=,591, p>,05). Technology acceptance was taken out of regression analysis and it was re-analyzed in this model:

Table 2*: Findings regarding the relation between digital citizenship, self-efficacy in technological leadership and open leadership*

Variable	B	β	T	P	Binary r	Tolerance	VIF
Fixed	5,876		,911	,364			
Digital citizenship	,209	,338	4,550	,000	,607	,620	1,613
Self-efficacy in technological leadership	,703	,435	5,853	,000	,644	,620	1,613

R= ,697 R²= ,496 F=70,775 p=,000

As can be seen from the **table 2**, digital citizenship along with self-efficacy in technological leadership have a medium level meaningful relation with open leadership (R=,697, R²=,496, p=,000, p<,05). According to this finding, there is a positive and medium level relation (r=,607) between open leadership and digital citizenship, similar to the positive and medium level (r=,644) relation between open leadership and technological leadership. According to the standardized regression coefficient (β), the order of importance of the effects of digital citizenship and self-efficacy in technological leadership that are predictor as listed: self-efficacy in technological leadership and secondly digital citizenship. When the normality and linearity predictions of this relationship are investigated, the outcome is positive. According to this finding, digital citizenship and self-efficacy in technological leadership have a predictor effect on open leadership. Digital citizenship and self-efficacy in technological leadership, both individually and together, have an important influence on forming open leadership behavior. The relation diagram based on these findings is given in **Figure 2.**
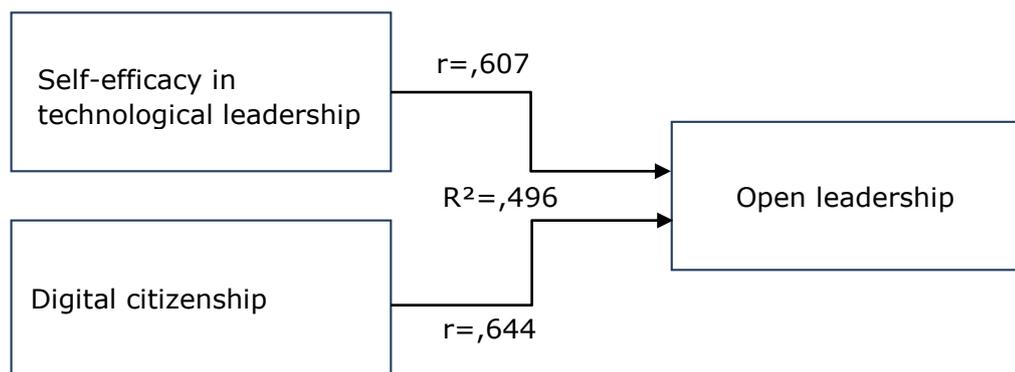

Figure 2: *Relation model between open leadership, digital citizenship and self-efficacy in technological leadership*

The final model diagram for the relation between open leadership, digital citizenship and self-efficacy in technological leadership can be seen in **Figure 3**. The "+" sign in the diagram represents a positive relation; the "r" sign represents the relation force between two variables; and the "R²" sign provides the variance percentage of to what extent independent variables explain the dependent variable.
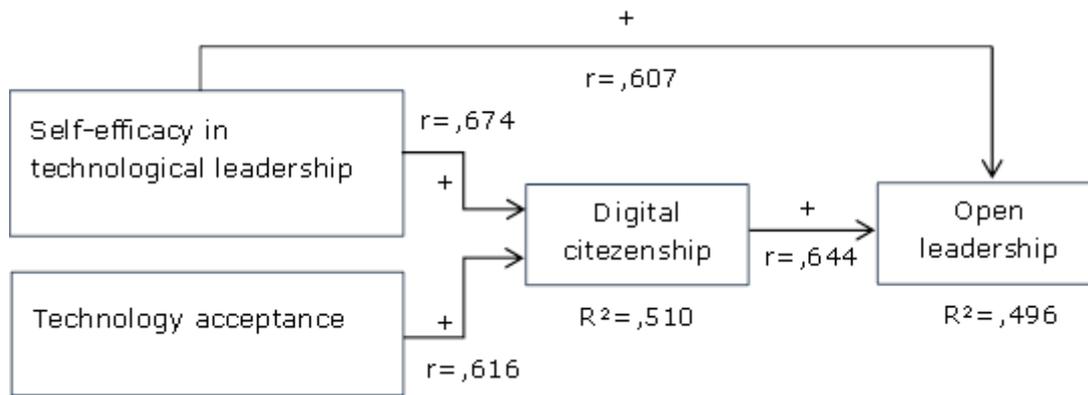
Figure 3: *Relation model for open leadership, digital citizenship and self-efficacy in technological leadership*

When **Figure 3** is examined, it can be seen that there is a positive and medium level relation between all variables. According to this finding, self-efficacy in technological leadership and technology acceptance explains 51% of digital citizenship, while self-efficacy in technological leadership and digital citizenship explain 50% of open leadership. This result indicates that digital citizenship and technological leadership are significant factors in developing open leadership.

<div align="center">DISCUSSION AND CONCLUSION</div>

A relationship that can also be considered as significant was identified between open leadership along with digital citizenship and technological leadership. A positive and medium level relation was observed between both digital citizenship as well as self-efficacy in technological leadership and open leadership. It was found that digital citizenship and self-efficacy in technological leadership (together) have an influence at the level of 51% in forming open leadership behavior. Additionally, although, technology acceptance has no direct influence on open leadership, it can still be said that it has an indirect influence on open leadership when considered together with digital citizenship.

The final model resulting from this relation process indicated that technology acceptance and self-efficacy in technological development have influence on forming digital citizenship; and that digital citizenship and self-efficacy in technological leadership have influence on forming open leadership.

The results of this empirical study provide practical implications for managers of educational institutions by investigating antecedents of open leadership, which is a crucial requirement for the management of schools and their overall success. Examining the indicators of open leadership is important, and in accordance with Bush et al. (2011),

leadership plays a key role in the success of educational institutions. When the results were examined, it was seen that technology acceptance and self-efficacy in technological leadership have an influence on digital citizenship and can therefore be considered as significant. It was observed that there is a positive and medium level relation between technology acceptance along with self-efficacy in technological leadership and digital citizenship. It was also concluded that technology acceptance and self-efficacy in technological leadership (together) have an influence at the level of 51% in forming digital citizenship behavior. Since everything is being digitalized, citizenship and its related concepts are also in processes of technology-driven transformation, with important implications for the global future of democratic culture. (Isın & Rupert, 2015)

As a result, in our digitalizing age, education administrators and leaders should become administrators or leaders who possess digital citizenship and open leadership qualities in order to be effective administrators. This is because the administrators of a technology-based education system should also be in control of technology and it is inevitable for them to integrate technology into their administrative processes. Within this framework, it should be emphasized that technology acceptance and self-efficacy in technological leadership are influential in developing digital citizenship and open leadership behaviors.

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