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An exploratory study on factors affecting the adoption of cloud computing by information professionals

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Abstract

Purpose – The purpose of this study explores what factors may influence information professionals to adopt new technologies, such as cloud computing in their organizations. The objectives of this study are as follows: to what extent does the technology acceptance model (TAM) explain information professionals intentions towards cloud computing, and to what extent do personal characteristics, such as cognitive appraisal and openness to experience, explain information professionals intentions to use cloud computing.

Design/methodology/approach – The research was conducted in Israel during the second semester of the 2013 academic year and encompassed two groups of information professionals: librarians and information specialists. Researchers used seven questionnaires to gather the following data: personal details, computer competence, attitudes to cloud computing, behavioural intention, openness to experience, cognitive appraisal and self-efficacy.

Findings – The current study found that the behavioural intention to use cloud computing was impacted by several of the TAM variables, personal characteristics and computer competence.

Originality/value – The study expands the scope of research about the TAM by applying it to information professionals and cloud computing and highlights the importance of individual traits, such as cognitive appraisal, personal innovativeness, openness to experience and computer competence when considering technology acceptance. Further, the current study proposes that if directors of information organizations assume that novel technologies may improve their organizations' functioning, they should be familiar with both the TAM and the issue of individual differences. These factors may help them choose the most appropriate workers.

Keywords Cloud computing, TAM, Cognitive appraisal, Information professionals, Openness to experience

Paper type Research paper

Introduction

One of the innovations that information technology (IT) has recently presented is the phenomenon of cloud computing. Cloud computing is the result of advancements in various technologies, including the Internet, hardware, systems management and distributed computing (Buyya *et al.*, 2011). Armbrust *et al.* (2009) suggested that cloud computing is a collection of applications using hardware and software systems to deliver services to end users via the Internet. Cloud computing offers a variety of services, such as storage and different modes of use (Leavitt, 2009). Cloud computing enables organizations to deliver support applications and avoid the need to develop their own IT systems (Feuerlicht *et al.*, 2010).

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Due to the growth of cloud computing use, the question arises as to what factors may influence information professionals to adopt new technologies, such as cloud computing, in their organizations. Assuming that using new technologies may improve the functioning of information organizations, this study seeks to explore if information professionals, who often work with technology and use it as an important vehicle in their workplace, are familiar with technological innovations and whether they are ready to use them in their workplaces. As the phenomenon of cloud computing is relatively new, there are not many surveys that focus on it and, furthermore, no one has so far focussed on the attitudes of information professionals towards cloud computing. The research may contribute to an understanding of the variables that influence attitudes towards cloud computing and may lead to further inquiry in this field.

The current study uses the well-known technology acceptance model (TAM), a theory for explaining individuals' behaviours towards technology (Davis, 1989; Venkatesh, 2000), as well as personal characteristics, such as cognitive appraisal and openness to new experiences, as theoretical bases from which we can predict factors which may influence information professionals adopting cloud computing in their workplaces. The objectives of this study are to learn the following: the extent to which the TAM explains information professionals' attitudes towards cloud computing, and the extent to which personal characteristics, such as cognitive appraisal and openness to experiences, explain the intention of information professionals to use cloud computing.

Theoretical background

Cloud computing

Researchers have divided cloud computing into three layers: Software as a Service (SaaS), Platform as a Service (PaaS) and Infrastructure as a Service (IaaS). SaaS has changed the concept of software as a product to that of a service instead. The software runs in the cloud and the user can access it via the Internet to work on an application. PaaS enables powerful tools for developers to create the applications, without having to deal with concerns about the infrastructure. IaaS provides complete infrastructure resources (e.g. servers, software, network equipment and storage). With IaaS, consumers do not have to purchase the latest technology, perform maintenance, upgrade software or buy software licenses (Anuar *et al.*, 2013). Cloud computing deployment can be divided into four types: private clouds, public clouds, community clouds and hybrid clouds (Mell and Grance, 2011). Public clouds have open access, private clouds run within organizations, community clouds contain resources that are shared with others in the community and hybrid clouds encompass two or more cloud models. Anuar *et al.* (2013) presented the main characteristics of cloud computing: *flexible scale* that enables flexible-scale capabilities for computing; *virtualization* that offers a new way of getting computing resources remotely, regardless of the location of the user or the resources; *high trust*, as the cloud offers more reliability to end users than relying on local resources; *versatility*, because cloud services can serve different sectors in various disciplines use the same cloud; and *on demand service*, as end users can tailor their service needs and pay accordingly.

As cloud computing is relatively new, there are not a lot of surveys that focus on it. Several researchers conducted in-depth interviews investigating respondents' attitudes towards keeping their virtual possessions in the online world (Odom *et al.*, 2012). Teneyuca (2011) reported on a survey of cloud computing usage trends that included IT

professionals as respondents. Results revealed preferences for virtualization and cloud computing technologies. However, the major reasons for cloud computing adoption being impeded were the lack of cloud computing training (43 per cent) and security concerns (36 per cent). Another report showed that nearly 40 per cent of Americans think that saving data to their hard drive is more secure than saving it to a cloud (Teneyuca, 2011). A further study (Ion *et al.*, 2011) explored private users' privacy attitudes and beliefs about cloud computing in comparison with those in companies. Anuar *et al.* (2013) investigated cloud computing in an academic institution, claiming that cloud computing technology enhances performance within the academic institution. A study that was carried out in the education arena examined factors that led students to adopt cloud computing technology (Behrend *et al.*, 2010).

Technology acceptance model

The TAM (Davis, 1989) is a socio-technical model which aims to explain user acceptance of an information system. It is based on the theory of reasoned action (TRA) (Fishbein and Ajzen, 1975) which seeks to understand how people construct behaviours. The model suggests that technology acceptance can be explained according to the individual's beliefs, attitudes and intentions (Davis, 1989). The TAM hypothesizes that one's intention is the best predictor of usage behaviour and suggests that an individual's behavioural intention to use technology is determined by two beliefs: perceived usefulness (PU) and perceived ease of use (PEOU). PU refers to the individual's perception that using a technology will improve performance and PEOU addresses a user's perceptions that using a particular system would be free of effort (Davis, 1989). The current study concentrates on PEOU as the researchers wanted to examine if information professionals' perceptions about new technology is affected by its simplicity and friendly interface. Earlier research mainly investigated personal behaviour to use new information systems and technology in the following:

- corporate environments (Gefen and Straub, 1997);
- Web shopping (Chang *et al.*, 2002; Lin and Lu, 2000);
- education, particularly e-learning (Park, 2009) and m-learning (Aharony, 2014); and
- the library arena (Aharony, 2011; Park *et al.*, 2009).

Personal innovativeness

A construct which may contribute to information professionals' intention behaviour to use cloud computing is personal innovativeness, a major characteristic in innovation diffusion research in general (Agarwal and Prasad, 1998; Rogers, 1983, 1995). Agarwal and Prasad (1998) have coined the term "personal innovativeness in the domain of IT" (PIIT), which describes a quite stable characteristic of the individual across situational considerations. Previous studies found that personal innovativeness is a significant determinant of PEOU, as well as of PU (Agarwal and Karahanna, 2000; Lewis *et al.*, 2003). Several researchers have suggested that innovative people will search for intellectually or sensorially stimulating experiences (Uray and Dedeoglu, 1997).

Openness to experience

Another variable that may predict respondents' perspectives towards cloud computing is openness to experience which addresses the tendency to search for new and challenging experiences, to think creatively and to enjoy intellectual inquiries (McCrae and Sutin, 2009). People who are highly open to experience are perceived as also open to new challenges, thoughts and emotions (McCrae and Costa, 2003). Studies reported that there is a positive relation between openness to experience and intelligence tests (Gignac *et al.*, 2004). According to Weiss *et al.* (2012), challenging transitions may influence differently those who are high or low in openness to experience. Those who are high may approach these situations with curiosity, emphasizing the new possibilities offered to them. However, those who are low in openness may be threatened and try to avoid them by adhering to predictable environments. Various researchers note that people who are high in openness to experience are motivated to resolve new situations (McCrae, 1996; Sorrentino and Roney, 1999). Furthermore, openness to experience is associated with cognitive flexibility and open-mindedness (McCrae and Costa, 1997), and negatively associated with rigidity, uncertainty and inflexibility (Hodson and Sorrentino, 1999). Thus, people who are less open to experience tend to avoid novelty and prefer certainty. Studies reveal that openness to experience declines in the later years (Allemand *et al.*, 2007; Donnellan and Lucas, 2008).

Challenge and threat

The following section will focus on the personality characteristics of challenge and threat that might affect information professionals' behavioural intention to use cloud computing. Challenge and threat are the main variables of a unidimensional, bipolar motivational state. They are the result of relative evaluations of situational demands and personal resources that are influenced both by cognitive and affective processes in motivated performance situations (Vick *et al.*, 2008). According to Lazarus and Folkman (1984), challenge refers to the potential for growth or gain and is characterized by excitement and eagerness, while threat addresses potential harm and is characterized by anxiety, fear and anger. Situations that suggest low demands and high resources are described as challenging, while those that suggest high demands and low resources are perceived as threatening (Seginer, 2008). In general, challenge or threat can take place in situations such as delivering a speech, taking a test, sports competitions or performing with another person on a cooperative or competitive task. The challenge appraisal suggests that with effort, the demands of the situation can be overcome (Lazarus *et al.*, 1980; Park and Folkman, 1997). On the other hand, threat appraisal indicates potential danger to one's well-being or self-esteem (Lazarus, 1991; Lazarus and Folkman, 1984), as well as low confidence in one's ability to cope with the threat (Bandura, 1997; Lazarus, 1991; Lazarus and Folkman, 1984). Different studies (Blascovich *et al.*, 2002; Blascovich and Mendes, 2000; Lazarus and Folkman, 1984; Lazarus *et al.*, 1980) have found that challenge leads to positive feelings associated with enjoyment, better performance, eagerness and anticipation of personal rewards or benefits. Several studies which focussed on the threat and challenge variable were carried out in the library and information science environment as well (Aharony, 2009, 2011).

Self-efficacy

An additional variable which may influence individuals' behavioural intention to use cloud computing is self-efficacy. The concept of self-efficacy was developed in the discipline of "social learning theory" by Bandura (1997). Self-efficacy addresses individuals' beliefs that they possess the resources and skills needed to perform and succeed in a specific task. Therefore, individuals' previous performance and their perceptions of relevant resources available may influence self-efficacy beliefs (Bandura, 1997). Self-efficacy is not just an ability perception, it encompasses the motivation and effort required to complete the task and it helps determine which activities are required, the effort in pursuing these activities and persistence when facing obstacles (Bandura, 1986, 1997). The construct of self-efficacy is made up of four principal sources of information:

(1) "mastery experience" refers to previous experience, including success and failure;

(2) "vicarious experience" addresses observing the performances, successes and failures of others;

(3) "social persuasion" includes verbal persuasion from peers, colleagues and relatives; and

(4) "physiological and emotional states" from which people judge their strengths, capabilities and vulnerabilities (Bandura, 1986, 1994, 1995).

As self-efficacy is based on self-perceptions regarding different behaviours, it is considered to be situation specific. In other words, a person may exhibit high levels of self-efficacy within one domain, while exhibiting low levels within another (Cassidy and Eachus, 2002). Thus, self-efficacy has generated research in various disciplines such as medicine, business, psychology and education (Kear, 2000; Lev, 1997; Schunk, 1985; Koul and Rubba, 1999). Computer self-efficacy is a sub-field of self-efficacy. It is defined as one's perceived ability to accomplish a task with the use of a computer (Compeau and Higgins, 1995). Various studies have noted that training and experience play important roles in computer self-efficacy (Compeau and Higgins, 1995; Kinzie *et al.*, 1994; Stone and Henry, 2003). Several studies have investigated the effect of computer self-efficacy on computer training performance (Compeau and Higgins, 1995) and on IT use (Easley *et al.*, 2003).

Hypotheses

Based on the study objectives and assuming that PEOU, personal innovativeness, cognitive appraisal and openness to experience may predict information professionals' behavioural intention to use cloud computing, the underlying assumptions of this study are as follows:

H1. High scores in respondent PEOU will be associated with high scores in their behavioural intention to use cloud computing.

H2. High scores in respondents' personal innovativeness will be associated with high scores in their behavioural intention to use cloud computing.

H3. Low scores in respondents' threat and high scores in respondents' challenge will be associated with high scores in their behavioural intention to use cloud computing.

H4. High scores in respondents' self-efficacy will be associated with high scores in their behavioural intention to use cloud computing.

H5. High scores in respondents' openness to experience will be associated with high scores in their behavioural intention to use cloud computing.

H6. High scores in respondents' computer competence and in social media use will be associated with high scores in their behavioural intention to use cloud computing.

Methodology

Data collection

The research was conducted in Israel during the second semester of the 2013 academic year and encompassed two groups of information professionals: librarians and information specialists. The researchers sent a message and a questionnaire to an Israeli library and information science discussion group named "safranym", which included school, public and academic librarians, and to an Israeli information specialist group named "I-fish", which consists of information specialists that work in different organizations. Researchers explained the study's purpose and asked their members to complete the questionnaire. These two discussion groups consist of about 700 members; 140 responses were received, giving a reply percentage of 20 per cent.

Data analysis

Of the participants, 25 (17.9 per cent) were male and 115 (82.1 per cent) were female. Their average age was 46.3 years.

Measures

The current study is based on quantitative research. Researchers used seven questionnaires to gather the following data: personal details, computer competence, attitudes towards cloud computing, behavioural intention, openness to experience, cognitive appraisal and self-efficacy.

The personal details questionnaire had two statements. The computer competence questionnaire consisted of two statements rated on a 5-point Likert scale (1 = strongest disagreement; 5 = strongest agreement). The cloud computing attitude questionnaire, based on Liu *et al.* (2010), was modified for this study and consisted of six statements rated on a seven-point Likert scale (1 = strongest disagreement; 7 = strongest agreement). A principal components factor analysis using Varimax rotation with Kaiser Normalization was conducted and explained 82.98 per cent of the variance. Principal components factor analysis revealed two distinct factors. The first related to information professionals' personal innovativeness (items 2, 3 and 5), and the second to information professionals' perceptions about cloud computing ease of use (PEOU) (items 1, 4, and 6); the values of Cronbach's Alpha were 0.89 and 0.88, respectively.

The behavioural intention questionnaire, based on Liu *et al.* (2010), was modified for this study and consisted of three statements rated on a six-point Likert scale (1 = strongest disagreement; 6 = strongest agreement). Its Cronbach's Alpha was 0.79.

The openness to experience questionnaire was derived from the Big Five questionnaire (John *et al.*, 1991) and consisted of eight statements rated on a five-point Likert scale (1 = strongest disagreement; 5 = strongest agreement); Cronbach's Alpha was 0.81.

The cognitive appraisal questionnaire measured information professionals' feelings of threat versus challenge when confronted with new situations. It consisted of 10 statements rated on a six-point scale (1 = fully disagree; 6 = fully agree). This questionnaire was previously used (Aharony, 2009, 2011; Yekutiel, 1990) and consisted of two factors: threat (items 1, 2, 3, 5, 7 and 8) and challenge (items 4, 6, 9 and 10). Cronbach's Alpha was 0.70 for the threat factor and 0.89 for the challenge factor.

The self-efficacy questionnaire was based on Askar and Umay's (2001) questionnaire and consisted of 18 statements rated on a five-point scale (1 = fully disagree; 5 = fully agree); Cronbach's Alpha was 0.96.

Findings

To examine the relationship between openness to experience, cognitive appraisal (threat, challenge and self-efficacy), TAM variables (personal innovativeness and PEOU), and behavioural intention to use cloud computing, researchers performed Pearson correlations, which are given in Table I.

Table I presents significant correlations between research variables and the dependent variable (behavioural intention to use cloud computing). All correlations are positive, except the one between threat and behavioural intention to use cloud computing. Hence, the higher these measures, the greater the behavioural intention to use cloud computing. A significant negative correlation was found between threat and the dependent variable. Therefore, the more threatened respondents are, the lower is their behavioural intention to use cloud computing.

Regarding the correlations between research variables, significant positive correlations were found between openness to experience and challenge, self-efficacy, personal innovativeness and PEOU. A significant negative correlation was found between openness to experience and threat. That is, the more open to experience respondents are, the more challenged they are, the higher is their self-efficacy, personal innovativeness, and PEOU and the less threatened they are. In addition, significant negative correlations were found between threat and self-efficacy, personal innovativeness and PEOU. We can conclude that the more threatened respondents are, the less they are self-efficient, personally innovative and the less they perceive cloud computing as easy to use. Significant positive correlations were also found between

Table I.
Pearson correlations between openness to experience, cognitive appraisal, TAM and behavioural intention to use cloud computing ($n = 140$)

Measures	Openness	Threat	Challenge	Self-efficacy	Innovative	PEOU	Intention
Openness							
Threat	−0.20*						
Challenge	0.25**	−0.10					
Self-efficacy	0.53***	−0.36***	0.19*				
Innovative	0.48***	−0.28***	0.33***	0.53***			
PEOU	0.34***	−0.31***	0.21*	0.60***	0.66**		
Intention	0.36***	−0.38***	0.37***	0.56***	0.57***	0.62***	

Notes: *$p < 0.05$; **$p < 0.01$; ***$p < 0.001$

self-efficacy and personal innovativeness and PEOU. Thus, the more self-efficient respondents are, the more personally innovative they are and the more they perceive cloud computing as easy to use.

The study also examined two variables associated with computer competence: computer use and social media use. Table II presents correlations between these two variables and the other research variables.

Significant, high correlations were found between computer competence variables and openness to experience, self-efficacy, personal innovativeness, PEOU and behavioural intention to use cloud computing. Hence, the higher respondents' computer competence, the more they are open to experience, self-efficient and personally innovative, and perceive cloud computing as easy to use, the higher is their behavioural intention to use cloud computing.

Researchers also examined relationships with demographic variables. To examine the relationship between age and other research variables, the researchers performed Pearson correlations. A significant negative correlation was found between age and PEOU, $r = -0.21, p < 0.05$. We may assume that the younger the respondents are, the more they perceive cloud computing as easy to use. To examine whether there are differences between males and females concerning the research variables, a MANOVA was performed and did not reveal a significant difference between the two groups concerning research variables, $F(7,130) = 1.88, p > 0.05$.

The researchers also conducted a hierarchical regression using behavioural intention to use cloud computing as a dependent variable. The predictors were entered as five steps:

(1) respondents' openness to experience;

(2) respondents' computer competence (computer use and social media use);

(3) cognitive appraisal (threat, challenge and self-efficacy);

(4) TAM variables (personal innovativeness and PEOU); and

(5) interactions with the TAM variables.

The entrance of the four first steps was forced, while the interactions were done according to their contribution to the explained variance of behavioural intention to use cloud computing. The regression explained 54 per cent of behavioural intention to use cloud computing. Table III presents the standardized and unstandardized coefficients of the hierarchical regression of respondents' behavioural intention to use cloud computing.

The first step introduced the openness variable that contributed significantly by adding 13 per cent to the explained variance of behavioural intention to use cloud computing. The beta coefficient of the openness variable is positive; hence, the more

Table II. Pearson correlations between computer use, social media use, and openness to experience, cognitive appraisal, TAM and behavioural intention to use cloud computing ($n = 140$)

Measures	Openness	Threat	Challenge	Self-efficacy	Innovative	PEOU	Intention
Computer use	0.30***	−0.11	0.04	0.34***	0.37***	0.37***	0.27***
Social media use	0.22**	−0.08	0.01	0.32***	0.35***	0.40***	0.28***

Notes: $^{**}p < 0.01$; $^{***}p < 0.001$

Predictors	B	β	R^2	ΔR^2
1. Openness	0.68	0.36***	0.13***	0.13***
2. Openness	0.54	0.29***	0.18***	0.05*
>Computer	0.18	0.11		
Social media	0.18	0.17*		
3. Openness	0.32	0.01	0.43***	0.25***
Computer	0.09	0.05		
Social media	0.12	0.11		
Threat	−0.32	−0.20**		
Challenge	0.34	0.26***		
Self-efficacy	0.68	0.36***		
4. Openness	0.00	0.00	0.52***	0.09***
Computer	−0.00	−0.00		
Social media	0.03	0.02		
Threat	−0.24	−0.15		
Challenge	0.26	0.20**		
Self-efficacy	0.35	0.18*		
Innovation	0.11	0.13		
PEOU	0.30	0.32***		
5. Openness	−0.01	−0.00	0.54***	0.02*
Computer	−0.17	−0.10		
Social media	0.01	0.01		
Threat	−0.24	−0.15*		
Challenge	0.26	0.20**		
Self-efficacy	0.34	0.18*		
Innovation	0.12	0.14		
PEOU	0.31	0.33***		
Computer X Innovation	−0.17	−0.16*		

Table III.
Hierarchical regression coefficients of respondents' behavioural intention to use cloud computing ($n = 140$)

Notes: *$p < 0.05$; **$p < 0.01$; ***$p < 0.001$

open to experience respondents are, the higher is their behavioural intention to use cloud computing. The second step introduced the two computer competence variables (computer use and social media use) which contributed 5 per cent to the explained variance of behavioural intention. Of these two variables, only the social media variable contributed significantly and its beta coefficient was positive. In other words, the more respondents use social media, the higher is their behavioural intention to use cloud computing. Note that Pearson correlations found significant positive correlations between these two variables and behavioural intention to use cloud computing. It seems that because of the correlation between these two variables, $r = 0.33$, $p < 0.001$, the computer use variable did not contribute to the regression.

As the third step, researchers added respondents' personal appraisal variables (threat and challenge, and self-efficacy), and this also contributed significantly by adding 25 per cent to the explained variance of behavioural intention. The beta coefficients of challenge and of self-efficacy were positive, while that of threat was negative. Therefore, we may conclude that the more respondents perceived themselves as challenged and self-efficient, and the less they perceived themselves as threatened,

the higher is their behavioural intention to use cloud computing. The inclusion of this step caused a decrease in the β size of the openness to experience variable that changed it into an insignificant one, and may suggest a possibility of mediation. Sobel tests indicated that self-efficacy mediates between openness to experience and behavioural intention ($z = 4.68$, $p < 0.001$). Hence, the more respondents are open to experience, the higher is their self-efficacy and, as a result, the higher is their behavioural intention to use cloud computing.

The fourth step added the TAM variables (respondents' PEOU and personal innovation), and this also contributed significantly by adding 9 per cent to the explained variance of behavioural intention to use cloud computing. The beta coefficient of this variable was positive; therefore, the more respondents perceived themselves to be personally innovative and cloud computing as easy to use, the higher is their behavioural intention to use cloud computing. Note that in this step there was a decrease in the β size of self-efficacy. Sobel tests indicated that of the two variables, PEOU mediates between self-efficacy and behavioural intention ($z = 4.77$, $p < 0.001$). Thus, the more respondents perceive themselves as self-efficient, the higher they perceive cloud computing's PEOU and, as a result, the higher is their behavioural intention to use it.

As the fifth step, researchers added the interaction between computer use X personal innovativeness. This interaction added 2 per cent to the explained variance of behavioural intention to use cloud computing and is presented in Figure 1.

Figure 1 shows a correlation between personal innovation and behavioural intention to use cloud computing among respondents who are low and high in computer use. This correlation is higher among respondents who are low in computer use, $\beta = .40$, $p < 0.05$, than among those who are high in computer use, $\beta = 0.04$, $p < 0.05$. It seems that especially among participants who are low in computer use, the higher their personal innovativeness, the higher is their behavioural intention to use cloud computing.

Discussion

The present research explored the extent to which the TAM and personal characteristics, such as threat and challenge, self-efficacy and openness to experience, explain information professionals' perspectives on cloud computing. Researchers divided the study hypotheses into three categories. The first (consisting of *H1-H2*) refers to the TAM, the second (*H3-H5*) to personality characteristics and, finally, H6 to computer competence. All hypotheses were accepted. Regarding the first category of

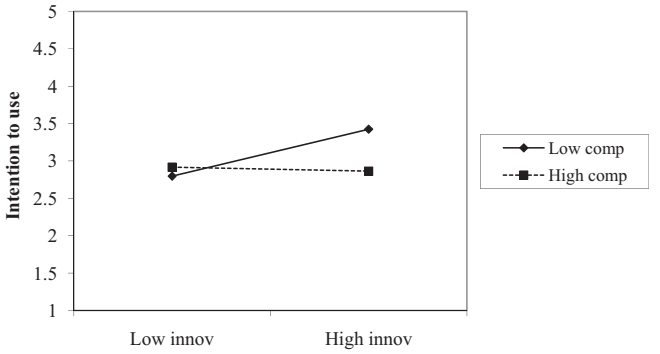

Figure 1.
Interaction between computer use and personal innovativeness

hypotheses, results show that both were accepted. Findings suggest that high scores in PEOU and personal innovativeness are associated with high scores in respondents' intention to adopt cloud computing. These findings can be associated with previous ones that found that PEOU, as well as personal innovativeness, affect the intention to use IT (Agarwal and Prasad, 1998; Aharony, 2014; Al-Gahtani, 2001; Serenko, 2008). Therefore, we may assume that information professionals would use cloud computing if they think it would not require a lot of effort and if they perceive themselves as personally innovative. If information centre directors assume that adopting novel technologies will improve their organizations' functioning and if they like their employees to use novel technologies within their organizations, they should expose them to these technologies and emphasize their simplicity and ease of use, thus lowering any previous assumptions about the complexity of technology. In addition, when they recruit new employees, they may wish to look for people who are technologically adventurous, assuming that they will bring a fresh perspective to their workplace.

Addressing the second category (*H3-H5*), findings indicate that these three hypotheses were also accepted. It should be noted that in the hierarchical regression, the cognitive appraisal variables (threat, challenge and self-efficacy) contributed the most (25 per cent) to the behavioural intention to use cloud computing. Hence, we may assume that personality characteristics are major factors which influence respondents' behavioural intention to use cloud computing.

H3 emphasizes that the more challenged and the less threatened respondents are when they think about cloud computing, the higher is their behavioural intention to use it is. This finding echoes a previous one (Shoham and Gonen, 2008) that found that threat and challenge are mediating variables predicting attitudes towards computer use. We may assume that those information professionals who have experienced or predict failure when coping with novel technologies have lower intentions to use cloud computing. However, those participants who are challenged foresee the potential for growth and are excited and eager to try to use a novel technology, such as cloud computing. Information professionals should be exposed to and experience cloud computing within their workplace to reduce their level of threat.

It was also not unexpected to see *H4* accepted. We can say, then, that the more self-efficient respondents are, the higher their behavioural intention to use cloud computing. This finding can be related to Bandura (1986) who postulated that people who have high self-efficacy will take more challenging tasks than those with low self-efficacy. In the present study, then, they will be more willing to try to use cloud computing. Various studies have shown that training and experience play an important role in computer self-efficacy (Compeau and Higgins, 1995; Kinzie *et al.*, 1994; Stone and Henry, 2003). Thus, again, it is suggested that information organization directors enable their employees to experience working with new technological platforms.

H5 reveals that high scores in respondents' openness to experience is associated with high scores in behavioural intention to use cloud computing. This finding was not surprising, as openness to experience is related to creativity, curiosity and preference for novelty (McCrae and Sutin, 2009). In addition, previous studies (Colquitt *et al.*, 2002; Sykes *et al.*, 2011) have indicated the association between openness to experience and computer use. We can then assume that this personality trait is essential when considering the issue of adopting novel technologies and suggest that information organization directors be aware of individual differences, such as openness to

experience, if they would like to incorporate new technological tools into their organizations.

The last category refers to computer competence and was confirmed. Results show that participants, who have high scores in computer use and in social media use, also have higher scores in behavioural intention to use cloud computing. We may conclude that the more expertise participants have with computers and social media, the higher is their intentional behaviour to use cloud computing. We may further posit that those people are aware of the advantages and disadvantages of their future use of technological innovations, and have decided that it is better for them to adopt, use and master new technologies within their organizations. In addition, the interaction between computer use X personal innovativeness suggests that among information professionals who have low scores in computer use, the higher their personal innovativeness, the higher is their behavioural intention to use cloud computing. In other words, this finding again shows the importance of personal characteristics. Even though respondents are not computer savvy, the fact that they are personally innovative affects their behavioural intention to use cloud computing.

Conclusion

To conclude, the current study found that the behavioural intention to use cloud computing was impacted by several of the TAM variables, personal characteristics and computer competence. This paper has a number of theoretical and practical implications: it expands the scope of research about the TAM by applying it to information professionals and cloud computing, and highlights the importance of individual traits, such as cognitive appraisal, personal innovativeness, openness to experience and computer competence, when considering technology acceptance. Estimating that using new technologies will improve information organizations' functioning, the current study proposes that directors of information organizations should be familiar with both the TAM and the issue of individual differences. These factors may help them choose the most appropriate workers.

This study has some limitations. The first is that because of the fact that it was carried out only in Israel, we suggest that this study will be perceived as an exploratory one. In addition, the researchers suggest that an international perspective on cloud computing be obtained by carrying out the study in other countries. Secondly, to gain a broader perspective, it is recommended that another study which includes both students and information professionals be conducted. Lastly, a future study may also use qualitative methods, such as open questions or interviews to supplement the quantitative analysis, and, thereby, enrich the findings by adding other dimensions to the inquiry process.

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