Relationship of Computer Usage and Work Self-Efficacy of Employees in the Organizations

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Abstract
An individual's perceived ability to adopt computer or information technology successfully has been shown to be major factor affecting his or her willingness to accept new technology. Hence, the relationship of self-efficacy with information system usage (computer, Internet, new information technology, etc.) is noteworthy. This research aims at studying exactly that. Four major constructs of self-efficacy presented by Albert Bandura are discussed in the paper. The literature review and the relevant researches, mentioned previously, all suggest that a relationship exists between Computer/Information System Usage and Self-efficacy, both in learning institutions and workplace environments. This study, however aims at interrogating this relationship at workplace environments of Rawalpindi/Islamabad regions of Pakistan, in particular. To conclude the results 150 questionnaires were distributed out of which we received 127 back. The participants have matriculation to doctorate qualification; however, majority had master's degree which is sixteen years of education in Pakistan.
This study and its findings are significant on another level as well. Throughout the literature review, the researches that have been quoted have all been carried out abroad. Although, there is an advent of Information Technology in Pakistan and individuals are getting to be computer savvy, little to no research can be found that has been conducted here. This may be an initial step and that too in the small cities of Rawalpindi/Islamabad; the results nonetheless are promising and can pave a way for more thorough and large scale future investigations on the matter. In conclusion, the findings can also assist in creating awareness regarding the association between computer self-efficacy and work self-efficacy amongst the population. This in turn, can help bring about a change in the opinions and attitudes of individuals thus, creating a constructive and optimistic approach toward Information System and Computer usage whereby, increasing employee productivity and performance.
Keywords: Self-Efficacy, Technological Self-Efficacy, Work Self-Efficacy, Information System's Usage, Organizations and Computer Usage.

1. Introduction
Information Technology (IT) with its capacity to process, store and transmit information has a significant impact on organizational effectiveness and productivity (Curley, 1984; Maglitta, 1991 and Sullivan-Trainor, 1991). Information Systems research has attempted to identify numerous factors affecting computer usage (Davis, Bagozzi & Warshaw, 1989; Igbaria, 1993; Lucas, 1978; Zmud, 1979).

Furthermore, recent advances in information technology have altered employees' jobs and career in fundamental ways. One of the most prevalent and important changes contributed by new IT is the ability for employees to work anytime and anywhere. Moreover, the effects of this change are not concentrated in one portion of the labor force – formal telecommute are being offered to employees across the spectrum of occupational categories and hierarchal positions (Kurland & Bailey 1999).

An individual's perceived ability to adopt computer or information technology successfully has been shown to be major factor affecting his or her willingness to accept new technology (Ellen, Bearden & Sharma, 1991; Hill, Smith & Mann, 1987; Leonard & Kraus, 1985). Hence, the relationship of self-efficacy with information system usage (computer, Internet, new information technology, etc.) is noteworthy (Bandura, 1977). This research aims at studying exactly that.

2. Literature Review
According to Bandura (1977, 1995), self-efficacy is "the belief in one's capabilities to organize and execute the courses of action required to manage prospective situations". In other words, self-efficacy is a person's belief in his or her ability to succeed in a particular situation. Bandura (1994) described these beliefs as determinants of how people think, behave and feel. Furthermore, Kauter (2006) suggests, "think of self-efficacy as a kind of self-confidence" or a task-specific version of self-esteem (Brockner, 1988).
While explaining this construct, Bandura (1977, 1994) puts forward four major sources of self-efficacy:
- Mastery Experiences. "The most effective way of developing a strong sense of efficacy is through mastery of experiences" (Bandura, 1994). Performing a task successfully strengthens our sense of self-efficacy. However, failing to adequately deal with a task or challenge can undermine and weaken self-efficacy.

- Social Modeling. Witnessing other people successfully complete a task is another important source of self-efficacy. According to Bandura (1994), "seeing people similar to oneself succeed by sustained efforts raises observer's beliefs that they too possess the capabilities to master comparable activities to succeed".
- Social Persuasion. Bandura (1994) also asserted that people could be persuaded to believe that they have the skills and capabilities to succeed. Getting verbal encouragement from others helps people over come self-doubt and instead people focus on giving their best effort to the task at hand".
- Psychological Responses. Our own responses and emotional reactions to situations also play an important role in self-efficacy. Moods, emotional states, physical reactions and stress levels can all impact on how an individual feels about their personal abilities in a particular situation. A person who becomes extremely nervous before speaking in public may develop a weak sense of self-efficacy in these situations. However, Bandura (1994) also notes "it is not sheer intensity of emotional and physical reactions that is important, but rather how they are perceived and interpreted". By learning how to minimize stress and elevate mood when facing difficulty or challenging tasks people can improve their sense of self-efficacy.

Self-efficacy was developed as a part of a larger theory, the Social Learning Theory (Ashford & LeCroy, 2010); that has progressed into the Social Cognitive Theory (Levin, Culkin & Perrotto, 2001). Social Cognitive Theory emphasizes how cognitive, behavioral and environmental factors interact to determine motivation and behavior (Crothers, Hughes & Morine, 2008). According to Bandura, human functioning is the result of the interaction of all three of these factors (Crothers et al., 2008), as embodied in his Triadic Reciprocal Determinism model (Wood & Bandura, 1989).

The figure 1 illustrates how individuals do not simply respond to environmental influences, but also actively seek and interpret information.
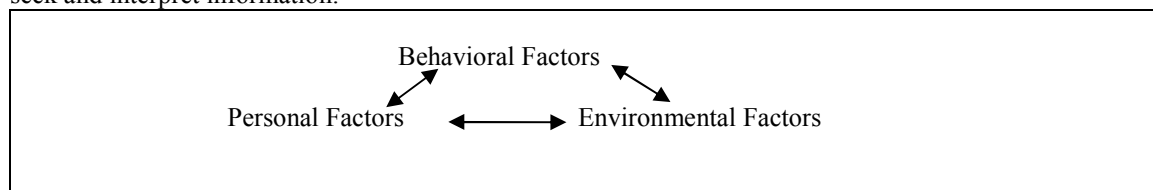

Figure 1. Conceptual Diagram of Behavioral, Personal and Environmental Factors

2.1 Work Self-efficacy

While self-efficacy, in general, refers to one's confidence in executing courses of action in managing a wide array of situations, work self-efficacy assesses workers' confidence in managing work place experiences. The theoretical underpinning is that individuals with higher work self-efficacy are more likely to look forward to and to be successful in work place performance. Furthermore, work accomplishment is believed, in turn, to increase self-efficacy through a feedback loop tying subsequent performance to augmented self-efficacy beliefs.

Self-efficacy affects learning and performance in three ways (Bandura, 1982):

1. Self-efficacy influences the goals that employees choose for themselves.
2. Self-efficacy influences learning as well as the effort that employees exert on the job.
3. Self-efficacy influences the persistence with which employees attempt new and different tasks.

In an extensive literature review on self-efficacy Bandura and Locke (2003) concluded that self-efficacy is a powerful determinant of job performance.

2.2 Technological Self-efficacy

Technological self-efficacy (TSE) is "the belief in one's ability to successfully perform a technologically sophisticated new task" (McDonald & Siegall, 1992). This construct, typically, refers to specific types of technology; for example, computer self-efficacy (Compeau & Higgins, 1995), or Internet self-efficacy (Joo, Bong & Choi, 2000) and information technology self-efficacy (Staples, Hulland & Higgins, 1999).

Today's modern society is completely rooted within a technological context that makes the understanding and evaluation of technological self-efficacy critical. Nearly half of Americans own smart phones (Smith, 2012) and this trend toward technological usage is not just limited to the United States, instead cell phones, computer and Internet use is becoming increasingly common around the world (Pew Center, 2010).

Technology is especially prevalent in workplace and learning environments. At work, 62% of employed Americans use the Internet and email and other information system technologies, but interestingly workplace users either use the Internet everyday (60%) or not at all (28%) (Madden & Jones, 2008). Internet and email use is obviously influenced by work duties, but 96% of employed Americans use some sort of new communication technology on the job (Madden & Jones, 2008). Successful investment in technology is associated with enhanced productivity (Johansen, Swigart & Reading 1996).

2.3 Relationship of Information System Usage and Self-efficacy

Researches illustrate that self-efficacy has been shown to be associated with an individual's performance in computer training and technology acceptance (Burkhardt & Brass, 1990; Compeau & Higgins, 1995; Ellen et al., 1991; Gist et al., 1989; Hill et al., 1987; Martocchio & Webster, 1992; Webster & Martocchio, 1992). In addition, studies have found evidence of a relationship between self-efficacy and (a) registration in computer courses at universities (Hill et al., 1987), (b) adoption of high technology products (Hill, Smith, & Mann, 1986), (c) innovation (Burkhardt & Brass, 1990), and (d) performance in software training (Gist et al., 1989; Webster & Martocchio, 1992).

In another instance, self-efficacy has been found to be associated with adaptability to new technology (Hill et al., 1987). Self-efficacy theory appears to be particularly well suited to the virtual organization context (Staples et al., 1996). Self-efficacy theory can also be used to incorporate a variety of aspects that Staples et al. (1996) suggested are particularly important in a remote work setting. For example, information technology (IT) appears to be a key driver of remote work, allowing companies to establish virtual arrangements that permit greater employee flexibility without sacrificing managerial control and that facilitates communication (Freedman, 1993; Handy, 1995; Illingworth, 1994; Lucas & Baroudi, 1994; Mowshowitz, 1994).

The ability to use IT represents an important component in an employee's ability to perform effectively in a remote management environment. Therefore, high levels of IT self-efficacy should also enhance the remotely managed employees' remote work self-efficacy and their ability to work effectively in a remote management setting (Staples et al., 1996).

Consistent with the previous argument, an individual's experience and training with the IT that is available for use in the remote environment is likely to influence his or her self-efficacy assessments. Specifically, self-efficacy theory suggests that the more training individuals have regarding IT, the more effectively they should be able to use it. Thus, the greater one's experience and training with available information technology, the higher one's self-efficacy (Staples et al., 1996).

Others, Dishaw, Strong & Bandy (2002), being one suggests, the construct of perceived computer self-efficacy (Compeau & Higgins, 1995) examine user's beliefs regarding their ability to perform specific tasks using a software package. Furthermore, Webster and Martocchio (1992) propose, computer self-efficacy has been shown to be positively related to performance during computer training. Moreover, computer self-efficacy was also found to be associated with attitudes toward computer technologies (Zhang & Espinoza, 1998). Hannafin and Land (1997) also found that learner's computer self-efficacy had a positive effect on the ability to search for information. Similarly, Levine and Donista-Schmidt (1998) found that as participants expressed stronger computer confidence, they also demonstrated more positive attitudes toward computer usage. In another instance, Henry and Stone (1995) in their research presented a theoretically sound model of how information system management support, system experience, and ease of system use affect the end-user's sense of computer self-efficacy and outcome expectancy. The empirical results validate the model indicating that computer self-efficacy and outcome expectancy affect the end-user's job satisfaction as well as mediate the impacts of management support, system experience and ease of system use.

3. Methodology

The literature review and the relevant researches, mentioned previously, all suggest that a relationship exists between Computer/Information System Usage and Self-efficacy, both in learning institutions and workplace environments. This study, however aims at interrogating this relationship at workplace environments of Rawalpindi/Islamabad regions of Pakistan, in particular. To be more specific, it has been suggested, in the above mentioned literature review, that individuals with higher levels of self-efficacy adopt or make an easier transition to computer usage or information system usage at work places. We aim to discover that once this transition is complete and employees become technical savvy, is there any association on employee work self-efficacy.
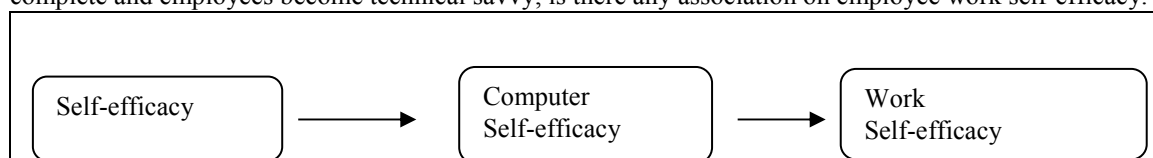

Figure 2. Relationship between self-efficacy, computer self-efficacy and work self–efficacy

The figure 2 illustrates, as mentioned in the literature review, there seems to be an association between high levels of self-efficacy, in an individual, and the adoption of and usage of computer related technology, hence increasing computer self-efficacy. This study, however, keeping in mind this assumption, takes a step forward to explore once the computer self-efficacy is established does it in turn increase employee work self-efficacy as well. For instance, previously for a researcher, per se it was very difficult and a tedious job to collect information or material regarding the subject of interest or under study. One had to visit libraries, consult various books, journals, articles, etc. that may or may not be available. Of course, time constraint was also a factor to

consider as libraries and such are not available after closing hours. With the transition to computer and IT usage this constraint has been dealt with and one would assume the researcher's work self-efficacy has also increased, as access to material is readily available. This is also true regarding medical professionals, money transactions, paying of various bills and individuals working from home or remote offices, etc.

3.1 Hypothesis
To be able to achieve the above mentioned objective, the following hypothesis has been formulated.
- Higher levels of employee computer self-efficacy will be associated with higher levels of employee work self-efficacy.

3.2 Instruments
The two instruments used to measure the variables of the study are briefly discussed in the following:
3.2.1 Computer Self-efficacy Scale (CSES)
Murphy et al. (1989) developed the Computer Self-efficacy Scale. The scale originally consists of 36 items. In the present study, however, 30 items have been included to measure employees' computer self-efficacy. The items in the scale represent three domains of hardware, software and Internet computer skills. The items are randomized so that the domains are not presented in any particular sequence. A five point Likert scale, with response options ranging from "very little confidence" = 1 to "quite a lot of confidence" = 5, has been used to gather responses. Each item begins with the prompt, I feel confident … The items in the CSES are designed such that a range of skills from very basic to more advanced were selected for each of the skill categories in order to ensure sufficient variation. At the same time, the items are not too technical for an average adult.
3.2.2 Work Self-efficacy Scale (WSES)
The Work Self-efficacy Scale was developed by Avallone, Pepe & Porcelli (2007). It includes 10 items assessing perceptions regarding specific work domains. Examples are the capability to manage interpersonal relationships (with colleagues and direct superiors); to work with colleagues with different characteristics and experiences; to behave efficaciously in the work context; to learn new working methods; to respect schedules and deadlines; and to achieve assigned goals. WSES consists of a five point Likert scale to collect responses from the sample. The response categories range from "strongly disagree' = 1 to "strongly agree" = 5.

3.3 Sample
Originally, the two questionnaires were distributed to 150 employees working in various offices and organizations, i.e. government offices, banks, universities, multinational organizations and NGOs (national and international) based in Islamabad, Pakistan. Out of the 150 questionnaires distributed 127 employees responded. The sample for this study consists of both females and males. The sample age ranges from early 20s to mid 60s. Likewise, their educational qualifications also vary from a simple matriculation to a PhD. Majority of the sample, however, have a Masters Degree.

3.4 Procedure
To conduct the study, two instruments were used, that have been discussed earlier. There were 40 items altogether, i.e., 30 items of CSES and 10 items of the WSES. Different offices and organizations were visited personally. In some of these visits a brief verbal account of the nature of the study was given and then the questionnaires were distributed to the employees in order to gather responses from the sample. In other offices and organizations a brief account regarding the nature of the study was given to the supervisor or personnel in charge who then distributed the questionnaires to the employees. Either way 127 out of the 150 distributed questionnaires returned. While distributing the questionnaires a conscientious effort was made to only gather data from those employees who use computers with regard to their work or in their work environments. This was done so we do not get irrelevant responses as some offices or organizations do not require their employees to use computers, in Islamabad, Pakistan.

3.5 Analysis of Data
The following presents the results of the study.
Table 1: Mean Scores and Standard Deviations

Scale	No. of Items	Mean	S.D
CSES	30	3.91	0.62
WSES	10	4.27	0.53

Computer Self-efficacy Scale (CSES) and Work Self-efficacy Scale (WSES) (N=127)
        Table 1 presents the mean score of the Computer Self-efficacy Scale (30 items) to be 3.91 and its standard deviation to be 0.62. Similarly, the mean score and standard deviation of the Work Self-efficacy Scale as indicated by Table 1 is 4.27 and 0.53, respectively.

In order to determine the relation of Computer Self-efficacy and work Self-efficacy, Pearson Product Correlation has been computed. Table 2 shows the results of the correlational analysis.

Table 2: Correlation

NO. of items	R	P
40	0.589	0.01

Computer Self-Efficacy Scale (30 items) and Work Self-efficacy Scale (10 items) (N=127)

The correlation results as presented in the table 2. are significant. Hence, it is clearly indicated that there is a strong positive relationship between Computer Self-efficacy and Work Self-efficacy.

4. Conclusion

The nature of this study has primarily been aimed toward finding out whether higher levels of computer self-efficacy are associated with higher levels of work self-efficacy in employees. This assumption is based on the fact that many offices and organizations in Pakistan are either in the process of or have already, to quite an extent, evolved in to paperless environments. This transition can be observed with regard to our telecommunication sector, introduction and promotion of online banking, paying various utility bills via the Internet, etc.

In order to test the hypothesis formulated in this study, a correlational analysis was done. The result of which shows that the hypothesis has been accepted, according to the data collected. The results clearly indicate that there is a positive relationship between computer self-efficacy and work self-efficacy ($r = .589 < 0.01$). These findings prove to be of utmost importance. This is because, in the recent past a transition to Information Technology in Pakistan, has been at an accelerating pace. As mentioned earlier, many work environs are adopting, introducing, promoting and encouraging Information System/Computer usage. According to the findings, work self-efficacy with regards to especially productivity, performance and job satisfaction can be further improved by using computers and other information related technologies. In addition to that, human resources can also be better channelized and subsequently trained in accordance to the latest and advanced Information Technology available. Apart from the increase of employee computer and work self-efficacy many benefits can also be received at a psycho-social level.

This study and its findings are significant on another level as well. Throughout the literature review, the researches that have been quoted have all been carried out abroad. Although, there is an advent of Information Technology in Pakistan and individuals are getting to be computer savvy, little to no research can be found that has been conducted here. This may be an initial step and that too in the small cities of Rawalpindi/Islamabad; the results nonetheless are promising and can pave a way for more thorough and large scale future investigations on the matter. In conclusion, the findings can also assist in creating awareness regarding the association between computer self-efficacy and work self-efficacy amongst the population. This in turn, can help bring about a change in the opinions and attitudes of individuals thus, creating a constructive and optimistic approach toward Information System and Computer usage whereby, increasing employee productivity and performance.

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