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THE IMPACT OF CRITICAL SUCCESS FACTORS OF E-LEARNING ON EFFECTIVENESS AND CONTINUED INTENSION WITH MEDIATING ROLE OF PSYCHOLOGICAL FACTORS: A STUDY ON HIGHER EDUCATION SECTOR OF PAKISTAN

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ABSTRACT

This study endeavors to examine and verify the impact of student's external e-learning factors and psychological variables on their effectiveness and continuance use of e-learning system. The data was collected using a structured questionnaire from virtual university students. The results for all variables were significant and showed positive relationship among them, and hence these hypotheses were accepted. The results reveal that perceived ease of use, perceived usefulness, and e-learner satisfaction played a mediating role between stimulus and response factors. The study provides important implications for the academic institutions, system designers, and system programmers. Management and instructors of an institution could boost student's e-learning use by establishing interactive, supportive and full of just environment.

Keywords: E-learning environment, Justice Environment, Supportive work environment, Perceived usefulness, E-learning satisfaction.

1. INTRODUCTION

University marketing with broad focus on university customers had been considered an important aspect to study as students were recognized as primary customers. (Robinson and Long, 1987).In order to decrease its cost, consideration of institutions in case of modern technology for its education purposes would consider. (Vedder, 2004). The concept of e-services is one of e-learning assent. As electronic learning would reduce traditional learning methodology to modern systems that narrowing down time and space obstacles. (Baylari and Montazer, 2009; Lee et al., 2009; Borup et al., 2012).In contemporary situation, in order to achieve teaching and learning purposes, different techniques and tools are executing and becoming part of different institutions. (Liu et al., 2010; Paechter and Maier, 2010; Lin, 2012). Higher education context has made e-learning as an essential element in today world. (Jurko witsch, 2006).

The term "e-learning has been initiated during 1980's, as when another mode (i.e. online learning) was taking its place. Different studies would improve different e-learning systems for their institutions that includes; learning management, design, support and content management systems. In order to improve e-learning concepts, organizations had built up e-learning systems. (Ngai *et al*., 2007).Learning management system (LMS) includes moodle, Atutor, bakai, etc. (Ssekakubo, 2011).Higher learning institutions are now equipping with e-learning systems so to provide a platform for management and course delivery (Laurillard, 2006).Developing countries like Pakistan, open source technology is a tool for higher education, but because of lack of proper guidance and tools, learners including teachers and students fail to utilize effectively. (Mumtaz, 2000).

Literature review has revealed that the implementation of particular system would have different stakeholder, but instructor/teacher would play a critical part as far as effectiveness is concerned in e-learning system context. (Drent & Meelissen, 2008; McGill, Klobas, & Renzi, 2014; Selim, 2007; Wang & Wang, 2009; Webster & Hackley,

1997).Teacher/instructor feelings, support from institution and its influence on execution of information system have been seen by many researchers. (Davis, Bagozzi, & Warshaw, 1989; Findik Coskuncay & Ozkan, 2013; Selim, 2007; Webster & Hackley, 1997).Albeit, the implementation of particular system would have different stakeholder, but instructor/teacher would play a critical part as far as effectiveness is concerned in e-learning system context. (Drent & Meelissen, 2008; McGill, Klobas, & Renzi, 2014; Selim, 2007; Wang & Wang, 2009; Webster & Hackley, 1997). In short, different studies considered educator's intentional behavior in learning management system use; therefore there is requirement to see student usage of behavioral intention. (Harun Cigdem, Abdullah Topcu, 2015).The study evaluate student's aspects through inculcation of peers, teachers and management. Here is a need to see the behavior and intention of individual students plus effectively in e-learning scenario

E-learning acceptance could be marked at micro and macro levels for future; micro including individual perceptive, background, individual institutional stimulus/motivation, while at macro it would be environmental and organizational scenarios.(Singh and Hardaker,2014).Environment such as e-learning environment at higher level in academics could be nurture.(Hossein Mahdizadeh, Harm Biemans, Martin Mulder,2008).

Researcher also gave assistance to use critical factors that would mediate among informational technology services and e-learning success. (Ahmed, Younis Alsabawy, Aileen Cater-Steel, Jeffrey Soar, 2013). Facet like flexibility, interaction, perceived usefulness and perceived ease of use must be considered in this regard. (Mei Lick Cheok and Su Luan Wong,2015).It is intended that administration/management and educator/instructor should concentrate on student's satisfaction plus their intention (e.g. continuance) in e-learning system use.(Tsong-Zen Liu, Tai-Yi Huang, and Chia-Shiang Hsu,2015). To investigate satisfaction influence on continuance intention in case of particular technology or e-learning system would be an important future working aspect. (Cheung & Lee, 2011; Chiu et al., 2011; Lee, 2010).

Organizational behavior and service marketing areas come across justice with having connection with variables that possessed individual behaviors. (Bies & Shapiro., 1987; Smith & Bolton., 2002). Prior studies would specify the fairness concept and comprehend its construct by elucidate perceptions of consumers.(Blodgettetal., 1997; Taxetal., 1998).Classroom justice would define as views on justness concerning results or processes that arise during educational situations.(Chory-Assad and Paulsel,2004).Several studies in the organizational behaviour and service marketing literature shows link between justice and distinct behaviour variables (Bies & Saphiro,1987; Smith & Bolton, 2002).In the field of educational psychology, many scholars have explored the effects of classroom justice on student's deviant behavior (Chory-Assad, 2002; Chory-Assad & Paulsel, 2004; Kennedy, Homant, & Homant, 2004; Morris, 2010).

Studies on the subject of e-learning has been done in Pakistani context,(Farid, Ahmad, Niaz, Itmazi, & Asghar, 2014; Iqbal & Ahmed, 2010; Kundi, Nawaz, & Khan, 2010; Nawaz, 2012; Qureshi et al., 2012; Qureshi, Nawaz, & Khan, 2011),tackling challenges, problems and few studies inculcate predictors, but as far as our knowledge is concerned, little research study has been conducted by keeping internal factors affecting learner effectiveness and its use. Through extensive review of literature it would come to know that justice, support, and other particular aspect of e-learning scenario could be important aspects to determine e-learning effectiveness and continuance intention to use e-learning system.

Studies also demanded for e-learning elements, and different researches argued to focus on continued intention with its preceding circumstances. (Almarashdeh, 2016; Mohammadi, 2015; Hussein and Hassan, 2017).According to different authors, ethical and moral values (that can be interlink with justice environment), are not under consideration within education system and specifically with respect to online medium, additionally, normally the focus is on teaching and learning modes, while ignoring ethical and moral considerations. (Abid et al., 2023). E-learning is considered as an important focus of attention by many scholars. (Yang and Xu, 2023).Therefore it is important to concentrate on justice within electronic leaning premises.

Definition of key terms

Table 1.1: Definitions of study variables or key terms

Variable	Abbreviations	Definitions	Author/year
E-learning environment	ELENV	It is defined as an online access that would take place anytime and everywhere to achieve learning resources	(Holmes & Gardner 2006).
Justice	JE	Justice is defined as the individual's assessment based decisions about the correctness of an individual's fate or dealing by others.	(Furby, 1986)
Interactional justice	IJUS	Interactional Justice also involves the way consumer is treated by the service representatives throughout the process	(Maxham & Neteyemer, 2002).
Distributive justice	DJUS	It is type of Justice in which consumer feels that their score which is result of the comparison of input and output during exchange is relative to the scores to which they are referring	(Adams, 1963; Sindhav et al., 2006).
Procedural justice	PJUS	The services result is created through procedures	(Sindhav et al., 2006).
Management support	ELMS	Management support in terms of project is defined as, "dedication of time to cost ratio, plus prospective, assessment plans, result orientation and dedication of management in solving problems and integration of industry process.	(Young and Jordan, 2008).
Class-mate support	ELCS	It is defined as individual acquiring knowledge as well as expertise that is supportive, and that helps in doing new possible ways and things from co-workers	(Perry Smith, 2006).
Perceived ease of use	PU	The tract whereabouts a learner assume effortless and easy use of e-learning system.	(Davis, 1989).
Perceived usefulness	PEOU	A degree by which learner suppose about use of e-learning system possibly will improve the performance in terms of learning.	(Davis,1989)
E-learner satisfaction	LS	Satisfaction is about response/reaction which pursues asynchronous activities of electronic learning plus it triggers different aspects, for instance; user/learner interface, performance, customization and content.	(Giese & Gote, 2000).
Continuance intention	CINT	Student's continuous intention has been under examination in an e-learning view.	(Roca, Chiu and Martinez, 2006).

2.2. Theoretical background:

2.2.1 Paradigm of S-O-R model

The usage of S-O-R paradigm has been seen to investigate the shopping outcomes of online store. According to the approach/avoidance behavior, the shopper's emotional and cognitive states that lead to the response, are influenced by the atmospheric cues the work as stimuli (Eroglu et al., 2003).

Different researches had modified S-O-R as per their research objectives. To investigate the store image and consumer merchandising behavior few researchers has focused on S-R component. The findings of the study suggest that consumer inclinations are influenced by merchandising, in-store service, accessibility, reputation and atmosphere of the store (Thang& Tan 2003).Koo and Ju (2010) introduced the moderator perceptual curiosity mediated by affective emotional state of customers while examining the relationship between atmospheric cues of online stores and behavioral intention. In another study by Chang et al. (2011) hedonic motivation was introduced as moderator between characteristics and consumer positive emotional responses. The study was investigating the

relationship between retail environment characteristic, consumer positive emotional responses and impulsive buying behavior.

In order to investigate the outcome phenomena, the study model of the current research has stimulus (S), organism (O) and response (R) as three key elements from the S-O-R model.

2.3. REVIEW OF LITERATURE

2.3.1 E-learning phenomena

E-learning is about using an internet technology in order to have extensive range of solutions so as to improve knowledge plus performance (Marc Rosenberg, 2001). It is defined as an online access that would take place anytime and everywhere to achieve learning resources. (Holmes & Gardner 2006). It is also defined as technology utilization as a mean to have learning with the help of e-devices that would help learner to be in an active way in information plus interaction online as well. (Wu,2012).

2.3.2. E-learning environment

The first dimension is inside around learning activities(i.e. self-paced) that give space to learner in an autonomous way with learner's relative actions, second dimension is inside around learning instructions that includes multimedia instructions and different formats and third dimension includes co-operative instructor led environment that creates favorable instructor and learner opportunities. Different studies evaluate e-learning that is based on three dimensional aspects (e.g. Students, teachers and e-learning management department) (Manca & Pozzi, 2014).

Group members or instructor attitude would affect perception of individuals. (Fulk, Schmitz & Stein field, 1990).As being a major participant in an e-learning environment, the attitude of instructor would positively affect the outcome of e-learning. (Webster & Hockley, 1997; Piccoli, 2001). Positive attitude of instructor would direct users (e.g. students) to considered electronic learning environment the same as useful (Cheng, 2012; Lee et al., 2009), in addition, the easy to use. (Lin, 2011).Different external factors would influence PU and PEOU. (Davis, Bagozzi & warshaw, 1989).Loads of studies tackle e-learning and satisfaction of students.(Swan, 2001; Shelley, Swartz, & Cole, 2008, 2007). One of the meta-analysis study inspected technology (i.e. desktop-based virtual) and effectiveness (i.e. instructional) of technology features. (Merchant, Goetz, Cifuentes, Kennicutt and Davis, 2013).

2.3.3. Supportive work environment

Supportive work environment is an important aspect in using e-learning systems or any technology. Societal players are important regarding work environment that should be supportive. Support (i.e. social) is defined as reciprocity or resource exchange process in which among two entities and having well-being intention for recipient. (Shumaker & Brownell, 1984).It may also define as combination of three different types of support (i.e. instrumental, informational, and emotional) through different sources (e.g. management and class-fellow support). Supportive work environment includes management support and class-fellow or co-worker support that facilitate the use of any technology. Support in terms of management is defined as the support that assists/facilitate the stipulation of sufficient human as well as financial resources in order to align organizational actions (Swink, 2003; Colbert, 2004).Management support is one of the specific aspects of work environment that is supportive which broaden insights/perceptions and motivation of staff (Parker et al., 2006) or students within education organizations.

Readiness to assist each other in their task (e.g., Co-operation, Support, Respect. etc), in addition, managing offensive and intimidating conditions in order to have work-environment fit is all about co-worker support (Beehr and McGrath,1992) or classmate support. Co-worker support at workplace is about sharing information (e.g. knowledge) and capability (e.g. expertise) as employee/coworker is facing with hard and difficult job (e.g. task), for those which the way out is not accessible easily and readily (Scott and Bruce, 1994).

Different studies inculcate different dimension in their research regarding support, for instance; advice/suggestion, help, and instruction, communication prospects/expectations, support as emotional, establishing secure environment. (Wentzel et al. 2010).

Different studies worked on supportive work environment, for instance; support received by students from instructor would have influencing higher effect on success of academic institution, student engagement, and interpersonal relationship in terms of pro-social behavior,

endeavor/effort/attention, student attendance, health (e.g. psychological/mental), weeknight study span, and less problematic behavior. (Birch & Ladd, 1997;Fraser & Fisher, 1982;Hamre & Pianta, 2001; Richman,Rosenfeld, & Bowen, 1998; Skinner, Furrer, Marchand, &Kindermann, 2008).Supportive work environment(i.e. management and co-worker/classmate) have an effect on innovative work behavior, that means higher level of innovative behavior is an outcome of support in terms of management and co-worker,(Madjar, 2005)or class-fellow support within electronic supportive environment.

Study pointed out that social/collective support (e.g. workplace) is positively related to outcome (e.g. work) consisting decrease in absenteeism (or increase in presence), and turnover, while increased in burnout confrontation/resistance, depression and nervousness reduction. (Harris, Winskowski, & Engdahl, 2007).

Anger and aggression are the outcome.es of non-supportive work environment. (Eisenberg et al., 1990, Eisenberg et al., 1986, Madjar, 2005). Work supportive climate would increase different responses (i.e. innovative) of member of staff/employee, and that it adjust responses within institutions/organizations. (Amabile et al., 1996; Amabile and Gryskiewicz, 1989; Oldham and Cummings, 1996; Zhou and George, 2001).

There is a positive connection among support (e.g. organization) and usage system (i.e. computer. (Igbaria et al. 1997, Sharma and Yetton 2003, Campeau and Higgins 1995, Injai 1996).Additionally, positive results has been shown by many studies among support with computer utility by beliefs and through behaviors. (Davis 1989, Igbaria et al. 1989, Eisenberger et al. 1986, Igbaria et al. 1995, Igbaria et al. 1996).Apart from positive relationship, negative relationship has been seen among support and usage of system (e.g. computer). (Igbaria and Iivari 1995, Igbaria 1990).It has an association by perceptions (i.e. PU as well as PEOU. TAM argued that acceptance or continues use intention of any particular system and technology is measured through PEOU and PU (i.e. belief factors). Whenever there is favorable supportive environment, it will possibility influence technology/support perception and its use. For instance; management support advances perception and attitude to PEOU and PU (e.g. computer as a system). (Daviset al. 1989, Leonard-Barton and Deschamps 1988, Rogers 1983, Fulk et al. 1990, Konradt et al. 2006, Sharma and Yetton 2003).Organizational support is significantly related to microcomputer use.(Igbaria et al., 1996).Internal as well as external support has been important preceding circumstance of perception of a particular system consequently affect individual acceptance (i.e. computer).(Igbaria, Zinatelli, Cragg, and Cavaye,1997).

Loads of studies would show a significant connection among supportive environment (i.e. learning) with satisfaction. (Joo, Joung & Son, 2014; Aggelidis & Chatzoglou, 2012; Al-Busaidi & Al-Shihi, 2012; Roszkowski & Soven, 2010; Teo, 2009). It has been argued that support has a positive relation with satisfaction, effectiveness(i.e. training),in addition support includes management, supervisor, co-worker (Chen et al., 2007; Harris et al., 2007) or class-fellow support. Support is significantly related to decrease in conflict, and stress (Noor, 2002), and hence increase in satisfaction. Support (i.e. technical) in case of e-learning technology is considered as critical element for use intention (Franklin, 2007; Rogers &Finlayson, 2004),

2.3.4. Justice environment

Justice is defined as the individual's assessment based decisions about the correctness of an individual's fate or dealing by others. (Furby, 1986).Classroom justice would define as views on justness concerning results or processes that arise during educational situations.(Chory-Assad and Paulsel,2004).

In a multi-dimensional view, justice is conceptualized with respect to three aspects including interactional justice, procedural justice, and distributive justice (Bies & Saphiro, 1987)).. Distributive justice is the degree to which the results of assumed matter shows justifiable.(Niehoff and Moorman,1993) Procedural Justice is defined as views of justness in ways to implement policies and procedures (Bakhshi, Kumar, & Rani, 2009; Folger & Konovsky, 1989); its focus is on the fairness of process(Maxham & Neteyemer, 2002). Interactional Justice refers to value of relational behavior which is received by the individuals while implementing policies and procedures in the organization (Bies & Moag, 1986).

Chory-Assad and Paulsel (2004) investigated the impact of procedural justice on aggressive behavior – hostility and resistance to instructor's request. A

study by Kennedy, Homant and Homant (2004) explored the relationship of perception of injustice and aggressive behavior on undergraduate students. Distributive and procedure justice environment will possibly effect anxiety and depression.(Spell and Arnold,2007).Well-being and justice environment has also been considered.(Colquitt and colleagues,2002).Previous result finding showed that fairness(i.e. price) has an influence on PEOU that foresee attitude in case of ETC, in addition, PEOU predict PU.

Distributive justice would influence worker response towards information technology with respect to motivation. (Mitchell et al. 2012).The outcome of E-learning continuance intention is due to the satisfaction of psychological needs. (Roca and Gagné 2008).Individual dissatisfaction would reflect in the form of user behavior en route for IS. (Joshi 1990).It has been proved that distributive justice would affect trust. (Chiu, 2009); whereas trust possibly will influence perceived usefulness (Geffen, 2002).

Albeit, loads of research work has been done in relation among attitudes and behaviors of members with individual perceptions about justice, while additional work has paid attention on justice climates that embody mutual perception of employees/teams by authorized individuals. (Colquitt, Noe, & Jackson, 2002; Mossholder, Bennett, & Martin, 1998; Naumann & Bennett, 2000).Due to this tendency, researches based on consumer complaint behaviour suggested that justice adds in enhancing the customer satisfaction (Maxham & Neteyemer, 2002; Tax, Brown &Chandrashekaran, 1998) but most of the studies have focused justice with respect to IT and IS usage.(Chiu, Chiu & Chan ,2007)

Results of their study indicated that distributive and procedural justices were having positive impact on the satisfaction of the learners. In another study by Chiu, Lin, sun & Hsu (2009) they explored the antecedents of consumer satisfaction and loyalty intention toward e-shopping integrating TAM and fairness theory. Findings showed that distributive and procedural justice contributes significant role in satisfaction and continuance intention in e-learning systems. (Chiu; 2007).

2.4. Psychological influences:

2.4.1. Perceived ease of use and Perceived usefulness

PU and PEOU would define as a degree by which learner/student suppose about use of e-learning system possibly will improve the performance in terms of learning, whereas, second belief would define as the tract whereabouts a learner assume effortless and easy use of e-learning system.(Davis,1989).PEOU and PU in electronic learning context is defined as PEOU is about perception of an individual learner towards ease of e-learning adoption, whereas, PU would about the extent of improvement in work once e-learning system has adopted. For example; perception about ease of use is the easiness of attaining skills by utilizing system (i.e. E-learning).

Effectiveness, relevancy, comprehensiveness/completeness, understandability, stability (i.e. technical), reliability, excessive search, appearance/attractiveness, and functionality (i.e. navigational) are multi-dimensions of the respective concepts, additionally, these dimensions would lead towards PEOU, which again implicit to PU plus continues intension/intentional usage in e-learning environment. (Poelmans, Wessa, Milis, Bloemen, & Doom, 2008).

PEOU and PU would have direct influence on satisfaction(Hsieh and Wang 2007;Hong,Thong and Tam,2006).The increase in ease of using system, and optimistic approach/attitude will built, and therefore satisfaction would improve.(De Smet,Bourgonjon,De Wever,Schellens,and Valcke,2012).Apart from having effort expectancy, PU has a positive impact on satisfaction.(Moreno & Molina,2013).Model(i.e. TAM),has a strong grip to discuss these perceptions – PU,PEOU, attitudes and intentions.(Davis,1989),as these have a strong effect on e-learner satisfaction. (Arbaugh, 2000; Arbaugh, 2002; Arbaugh & Duray, 2002; Atkinson & Kydd, 1997; Wu et al., 2006).In short, loads of work discussed about PEOU/PU are decisive aspects that have an effect on perceived learner satisfaction.(Arbaugh, Duray & Rebecca.,2002;Sun, Pei-Chen, Tsai, Ray J, Finger, Glenn, Chen, Yueh-Yang, &Yeh,2008; Liaw, Shu-Sheng. 2008). For example, Chiu, Hsu, Sun, Liu and Sun (2005) demonstrated that perceived usefulness influence positively e-learning effectiveness. One of study's findings showed that student's continuance intention

with regarding e-learning is strongly predicted through satisfaction and both of these factors by PU and playfulness. (Liu, Huang, Hsu, 2015).

2.4.2. E-learner satisfaction:

Student satisfaction can be defined as the student's perception pertaining to the college experience and perceived value of the education received while attending an educational institution (Astin, 1993 cited in Bollinger, Martindale, 2004). Different studies had tried to define satisfaction in their own way, as it is about the degree to which individual perceive about his/her fulfillment of needs/desires/goals.(Sanchez Franco,2009),in addition it is refer to their information system view.(Wang and Wang,2009).

Quality Information, system & service, confirmation/affirmation, and cognitive absorption are preceding circumstances of satisfaction. (Lim, Hong & Tans, 2008).System and information quality are not only have a relationship with use and ease of use, rather it would affect satisfaction of user.(Delone & Mclean 1992;Seddon,1997).According to information system perceptive, satisfaction possibly will effect individual.(Lgbaria & Tan,1997). Anxiety is a negative factor that has an effect on satisfaction, it means an increase in anxiety to particular system, and decrease in satisfaction of user is on the way. (Barbeite and Weiss,2004).By taking attitude as a separate construct as a feeling/belief of an individual towards particular technology(i.e. LMS),the decrease in complexity, the increase in satisfaction within respective system scenario.(Piccoli,Ahmad and Ives,2001).

Satisfaction is about response/reaction (i.e. affective) which pursues asynchronous activities of electronic learning plus it triggers different aspects, for instance; user/learner interface, performance, customization and content. (Giese & Gote, 2000).Particular to e-learning context, satisfaction is determinant of continuance intention. (Roca, Chiu & Martinez, 2006). loads of studies have shown a positive relationship e-learning use as services with it.(Chang, 2013; Hassanzadeh, 2012; Islam, 2012; Petter , 2008; Roca ,2006; Udo ,2011).Additionally, it has positive relation with intention(e.g. intention for future use).(Oliver,1980). Academic and computer skills and abilities, age, interaction(i.e. Among class fellows or a teacher),learning approach/style, span of course as learner leaned to spent and discussion/settings are the influencing factors of learner satisfaction, in addition, influencing e-learning effectiveness.(Hong,2002).

2.5. Individual behavioral and achievement outcome:

2.5.1. Continuance intention

The word "continuance" is a type of behavior that is after system has executed. It is multitude of different featured behaviors (i.e. Decision adoption, use and extension) of users once an application of information technology being set up, available and used by an individual in order to fulfill work tasks and activities. (Jasperson, Cater & Zmud, 2005).It is about the subjective chance of continuation in order to amuse or play a company recreation/stimulation game by learner. (Bhattacherjee, 2001; Taylor and Todd, 1995).

One of the aspects i.e. Perceived enjoyment will possibly affect continuance intention directly whenever using a technological device.(Teo & Noyes, 2011).Loads of work has been on behavioral attitude that would influence intention (i.e. continuance) or attitude positively influence intention.(Ajzen & Fishbein,1977; Oliver,1980; Blanco et al.,2010; Huang, 2008; Karaali et al., 2011).Apart from attitude, escapism/diversion, time pass, interaction(i.e. social) are significant aspects of continuance intention.(Sheldon,2008;Papacharissi and Mendelson,2010; Park,2009).

2.5.2. Effective e-learning:

Effectiveness in terms of Learning would define involvement in training sessions that provide the acquaintance, expertise and learned behavior plus its applicability in job.(Baldwin & Ford,1988).The research conducted by Signe schack noesgaard and his colleges in 2015, exhibits different definitional scenarios that investigated the effectiveness of e-learning, out of which are; e-learning solution, learning outcome, satisfaction(Harrington & Walker,2009; Jung et al, 2002; Maloney et al, 2011),wellness of e-learning, retention, work performance, interaction quality, measurement, etc ,as definitions for effectiveness. More elaborately speaking, firstly, it is the application of content of learning into work practices. Secondly, it is how well the e-learning would perform as compared to the traditional methodology at same content level. Thirdly, effective e-learning as an outcome is defined as the participants gaining novel understandings

because of e-learning initiative. Fourthly, effective e-learning as teacher competency may be taken as actual integration of computer (e.g.as a system) activities through proper inquiry-based pedagogy within classroom. (Angeli,2005).Three considerations have been seen while developing effective environments of e-learning are; characteristics of learner, interaction, and instructional modes.(Liaw,2004).It is defined as problem solving capacity plus thinking skills of high order.(Liaw,2007).

2.6. Hypothesis development and theoretical framework

Generally, consumer's environmental factors are considered as stimulus. This research study has considered students as a consumer and reviewed the three main e-learning external and critical factors i.e. E-learning environment, Supportive work environment, and Justice Environment. In the context of individuals' psychology, the consumer's psychological states (internal) represent the organism. The present study has reviewed and used three factors of internal psychological influence variables i.e. Perceived ease of use, Perceived usefulness and e-learner satisfaction. The response in the study is simply characterized by two variables (i.e.-learning effectiveness and Continuance use intention).With these considerations, the model of this study has been developed and elaborated **(See figure 2.2).**

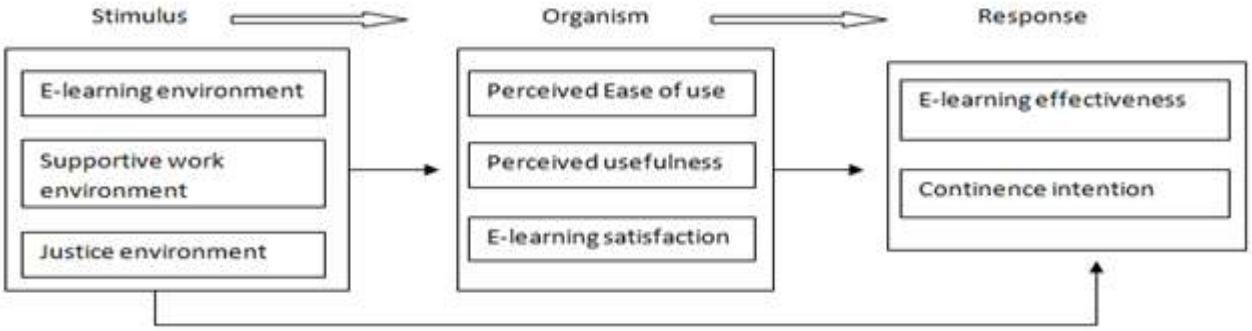


Figure 2.2: Proposed S-O-R Model

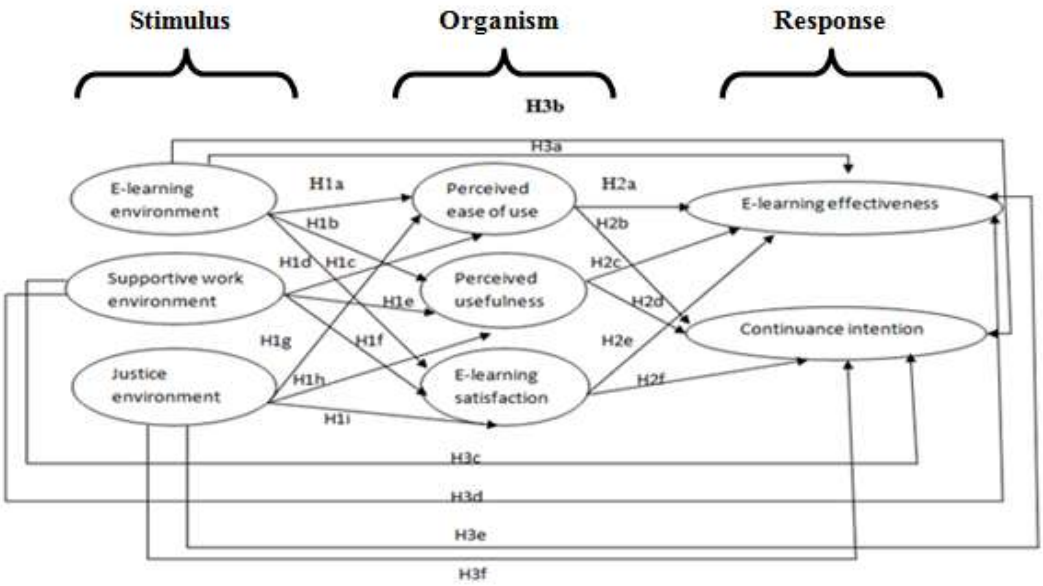


Figure 2.3: Theoretical framework w.r.t.hypothesis

Table 2.2: Summary of all Proposed Hypotheses

HYP	POSITIONS	STATEMETS
H1a	ELENV → PEOU	E-learning environment has significant impact on perceived ease of use.
H1b	ELENV → PUSE	E-learning environment has significant impact on perceived usefulness.
H1c	ELENV → LSAT	E-learning environment has significant impact on e-learner satisfaction.
H1d	SWE → PEOU	Supportive work environment has significant impact on perceived ease of use.
H1e	SWE → PUSE	Supportive work environment has significant impact on perceived usefulness.
H1f	SWE → LSAT	Supportive work environment has significant impact on e-learner satisfaction.
H1g	JE → PEOU	Justice Environment has significant impact on perceived ease of use.
H1h	JE → PUSE	Justice Environment has significant impact on perceived usefulness.
H1i	JE → LSAT	Justice Environment has significant impact on e-learner satisfaction.
H2a	PEOU → ELE	Perceived ease of use has significant impact on e-learning effectiveness.
H2b	PEOU → CINT	Perceived ease of use has significant impact on continuance intention.
H2c	PUSF → ELE	Perceived usefulness has significant impact on e-learning effectiveness
H2d	PUSF → CINT	Perceived usefulness has significant impact on continuance intention.
H2e	LSAT → ELE	Learner satisfaction has significant impact on e-learning effectiveness.
H2f	LSAT → CINT	Learner satisfaction has significant impact on continuance intention.
H3a	ELENV → ELE	E-learning environment has significant impact on e-learning effectiveness.
H3b	ELENV → CINT	E-learning environment has significant impact on continuance intention.
H3c	SWE → ELE	Supportive work environment has significant impact on e-learning effectiveness
H3d	SWE → CINT	Supportive work environment has significant impact on continuance intention.
H3e	JE → ELE	Justice Environment has significant impact on e-learning effectiveness.
H3f	JE → CINT	Justice Environment has significant impact on continuance intention.
H4a	ELENV → PEOU → ELE	Perceived ease of use mediates the relationship between E-learning environment and e-learning effectiveness.
H4b	ELENV → PEOU → CINT	Perceived ease of use mediates the relationship between supportive work environment and e-learning effectiveness
H4c	SWE → PEOU → ELE	Perceived ease of use mediates the relationship between Justice Environment and e-learning effectiveness
H4d	SWE → PEOU → CINT	Perceived ease of use mediates the relationship between E-learning environment and continuance intention
H4e	JE → PEOU → ELE	Perceived ease of use mediates the relationship between supportive work environment and continuance intention.
H4f	JE → PEOU → CINT	Perceived ease of use mediates the relationship between Justice Environment and continuance intention.
H5a	ELENV → PUSF → ELE	Perceived usefulness mediates the relationship between E-learning environment and e-learning effectiveness.
H5b	ELENV → PUSF → CINT	Perceived usefulness mediates the relationship between supportive work environment and e-learning effectiveness.

H5c	SWE → PUSF → ELE	Perceived usefulness mediates the relationship between Justice Environment and e-learning effectiveness
H5d	SWE → PUSF → CINT	Perceived usefulness mediates the relationship between E-learning environment and continuance intention
H5e	JE → PUSF → ELE	Perceived usefulness mediates the relationship between supportive work environment and continuance intention
H5f	JE → PUSF → CINT	Perceived usefulness mediates the relationship between Justice Environment and continuance intention
H6a	ELENV → LSAT → ELE	Learner satisfaction mediates the relationship between E-learning environment and e-learning effectiveness
H6b	ELENV → LSAT → CINT	Learner satisfaction mediates the relationship between supportive work environment and e-learning effectiveness
H6c	SWE → LSAT → ELE	Learner satisfaction mediates the relationship between Justice Environment and e-learning effectiveness.
H6d	SWE → LSAT → CINT	Learner satisfaction mediates the relationship between E-learning environment and continuance intention.
H6e	JE → LSAT → ELE	Learner satisfaction mediates the relationship between supportive work environment and continuance intention.
H6f	JE → LSAT → CINT	Learner satisfaction mediates the relationship between Justice Environment and continuance intention.

3. Method and measure:

The current study planned to examine model of e-learning external variables(ELE,JE,SWE) as stimulus and three psychological influences(PEOU,PU,LSAT) as organism, while behavioral outcome as response includes EFLE ,and CINT. Survey method was used for data collection.

Questionnaire was floated among 700 students (from virtual university of Pakistan) as a consumer personally and online as well. The questionnaire was distributed in virtual university across different campuses of Pakistan and convenience sampling technique was used.

Preface was specified at the beginning of survey instrument that would explain the research purpose. Questionnaire consists of 59 items. There were eight main variables and by adding dimensions, variable constituted item included thirteen in number. These constructs includes e-learning environment (i.e. Self-paced, multimedia instruction, instructor led), Justice Environment (Distributive, procedural, and interactional), Supportive work environment (Management support, course-fellow support), Perceived ease of use, Perceived usefulness, Learner's satisfaction, and continuance intention. Demographics includes age, gender, degree/course, and study mode. Responses were recorded on 5-point Likert scale ranging from strongly disagree (5) to strongly agree (1).

E-learning environment variable is measured on three distinct however correlated dimensions that would further assessed by twelve items. The items of these three dimensions were adapted from developed questionnaire by (Shu-Sheng Liaw/ Hsiu-Mei Huang, 2007). Self-paced dimension as SPLE is considered as first dimension of e-learning environment. This dimension constituted six items (e.g., I have more opportunities to create my own knowledge in the e-learning environment).Second dimension is denoted as MMLE is multimedia instruction. This dimension constituted three items (e.g., I like colorful picture in the online instruction).Instructor-led would consider as third dimension of e-learning environment that is denoted as ILLE. This dimension constituted three items (e.g., I like the instructor's voice and image in the e-learning environment).

Interactional justice dimension denoted as IJUS and is considered as first dimension of Justice Environment. This dimension constituted six items (e.g., Instructor(s)/supporting staff struggle to solve student's problem) Second dimension would denote as PJUS that is procedural justice. This dimension constituted five items (e.g., this institution immediately take responsibility for any problem).

Distributive justice would consider as third dimension of e-learning environment that is denoted as DJUS. This dimension constituted four items (e.g., I'm sure the result of student's complaint(s) is expected).

The degree of supportive work environment consisted of two dimensions including management support and coworker support. The scale is measured by eleven items in which management support consist of five items by Chandler et al, 2000 and class-fellow support consist of six items by (Subramanian & youndt, 2005; Lee & Choi, 2003; Gibson & Birkinshaw, 2004) for example, (e.g., Students in this institution feel it is easy to approach to their instructor).

Perceived ease of use variable is measured by four items (e.g. Learning to operate e-learning systems would be easy for me). The items of this construct were adapted from developed questionnaire by Arbaugh (2000) /Pei-Chen Sun/ Ray J. Tsai (2008).

Perceived usefulness variable is measured by four items (e.g. I would find e-learning system useful). The items of this construct were adapted from developed questionnaire by Arbaugh (2000) /Pei-Chen Sun/ Ray J. Tsai (2008).

This variable is measured by three items (e.g. I am satisfied with the performance of e-learning system). The items of this construct is adapted from developed questionnaire by Oliver (1980) and Spreng et al. (1996).This variable is measured by three items (e.g. the e-learning environment improves my thinking skills). This construct is adapted from developed questionnaire by Shu-Sheng Liaw/ Hsiu-Mei Huang (2007).

This variable is measured by three items (e.g. I intend to continue using the e-learning services in the future). This construct is adapted from developed questionnaire by Bhattacherjee (2001b) and Mathieson (1991). Authenticity of all related previous scales are mentioned below.

Table 3.1: Summary of all measures

Sr. no	Variables	Codes	Instrument Authors	No of items	Previous reliability and authors	Measurement scale
1	**Self-Paced**	SPLE	Shu-Sheng Liaw/ Hsiu-Mei Huang (2007)	6	α=0.97(Liaw,2007)	1= strongly Agree, 5= strongly disagree
2	**Multimedia Instruction**	MMLE	Shu-Sheng Liaw/ Hsiu-Mei Huang (2007)	3	α=0.97(Liaw,2007)	1= SA, 5=SD
3	**Instructor Led**	ILLE	Shu-Sheng Liaw/ Hsiu-Mei Huang (2007)	3	α=0.97(Liaw,2007)	1= SA, 5=SD
4	**Distributive Justice**	DJUS	Blodgett et al. (1997), Tax et al. (1998), Smith et al. (1999).	4	α=0.91.(Lopes and Silva, 2015)	1= SA, 5=SD
5	**Procedural Justice**	PJUS	Blodgett et al. (1997), Thibaut and Walker (1975).	5	α=0.88. (Lopes and Silva, 2015).	1= SA, 5=SD
6	**Interactional Justice**	IJUS	Clemmer (1988), Tax et al. (1998).	6	α=0.91. (Lopes and Silva, 2015).	1= SA, 5=SD
7	**Management Support**	ELMS	Chandler et al, 2000	5	α=.83 (Chandler et al, 2000; Hornsby et al, 2002	1= SA, 5=SD
8	**Co-worker/Course-fellows Support**	ELCS	Subramanian & youndt, 2005; Lee & Choi, 2003; Gibson & Birkinshaw, 2004	6	α=.86 (Subramanian & youndt, 2005; Lee & Choi, 2003; Gibson & Birkinshaw, 2004).	1= SA, 5=SD

9	**Perceived Usefulness**	PUSF	Arbaugh (2000) /Pei-Chen Sun/ Ray J. Tsai (2008)	4	α=.91 (Sun and Tsai,2007)	1= SA, 5=SD
10	**Perceived ease of use**	PEOU	Arbaugh (2000) /Pei-Chen Sun/ Ray J. Tsai (2008)	4	α=.90 (Sun and Tsai,2007)	1= SA, 5=SD
11	**Learner satisfaction**	LSAT	Oliver (1980) and Spreng et al. (1996).	3	α=90 (Chiu, Hsu, Sun, Lin, and Sun,2005)	1= SA, 5=SD
12	**Learning environment effectiveness**	EFLE	Shu-Sheng Liaw/ Hsiu-Mei Huang (2007)	3	α=0.97(Liaw,2007)	1= SA, 5=SD
13	**Continuance intention**	CINT	Bhattacherjee (2001b) and Mathieson (1991).	3	α=.94 (Chiu, Hsu, Sun, Lin, and Sun, 2005)	1= SA, 5=SD
14	**Demographic variables**		Self-developed	4	-	NA

Regression and hypothesis results:

4.5.1 Regression Analysis for Direct Path

The coefficient of e-learning environment is β= 0.79, p=.00, which demonstrate that ELENV has significant and positive association with PEOU.The coefficient of e-learning environment is β= 0.80, p=0.000 which demonstrates that ELENV has significant and positive association with PUSF.The coefficient of MELENV is β= 0.82, p=0.00 which demonstrates that e-environment has significant and positive association with e-learner satisfaction.

The coefficient of supportive work environment is β= 0.29, p=0.00 which demonstrates that MSWE has significant and positive association with Perceived ease of use. The coefficient of peer communication is β= 0.31, p=0.00 which demonstrates that MSWE has significant and positive association with PUSF.The coefficient of MSWE is β= 0.33, p=0.00 which demonstrates that MSWE has significant and positive association with learner satisfaction.

The coefficient of Justice Environment is β= 0.38, p=0.00 which demonstrates that MJE has significant and positive association with PEOU.The coefficient of Justice Environment is β= 0.39, p=0.00 which demonstrates that MJE has significant and positive association with MPUSF. The coefficient of justice environment is β= 0.34, p=0.00 which demonstrates that justice environment has significant and positive association with e-learner satisfaction.

The coefficient of perceived ease of use is β= 0.76, p=0.00 which demonstrates perceived ease of use has significant and positive association with e-learning effectiveness. The coefficient of Perceived ease of use is β= 0.70, p=0.00 which demonstrates that perceived ease of use has significant and positive association with continuance intention.

The coefficient of perceived usefulness is β= 0.79, p=0.00 which demonstrates that perceived usefulness has significant and positive association with e-learning effectiveness.The coefficient of perceived usefulness is β= 0.69, p=0.00 which demonstrates that perceived usefulness has significant and positive association with continuance intention.

The coefficient of Learner satisfaction is β= 0.76, p=0.00 which demonstrates that e-learner satisfaction has significant and positive association with e-learning effectiveness. The coefficient of learner satisfaction is β= 0.76, p=0.00 which demonstrates that learner satisfaction has significant and positive association with e-learning effectiveness.

The coefficient of e-learning environment is β= 0.78, p=0.00 which demonstrates that e-learning environment has significant and positive association with e-learning effectiveness. The coefficient of ELENV is β= 0.76, p=0.00 which demonstrates that e-learning environment has significant and positive association with continuance intention.

The coefficient of supportive work environment is β= 0.36, p=0.00 which demonstrates that MSWE has significant and positive association with e-learning effectiveness. The coefficient of supportive work environment is β= 0.38, p=0.00 which demonstrates that SWE has significant and positive association with Continuance intention.

The coefficient of Justice Environment is β= 0.42, p=0.00 which demonstrates that Justice environment has significant and positive association with e-learning effectiveness. The coefficient of justice

environment is β= 0.49, p=0.00 which demonstrates that justice environment has significant and positive association with continuance intention.

Summary of direct paths

Hyp	Statement	B*	p-value	R^2	F change	Results
H1a	E-learning environment has significant impact on perceived ease of use.	.79*	.00	.64	1249.03	Accepted
H1b	E-learning environment has significant impact on perceived usefulness.	.80*	.00	.64	1265.39	Accepted
H1c	E-learning environment has significant impact on e-learner satisfaction. .	.82*	.00	.68	1541.50	Accepted
H1d	Supportive work environment has significant impact on perceived ease of use.	.29*	.00	.09	65.8	Accepted
H1e	Supportive work environment has significant impact on perceived usefulness.	.31*	.00	.97	75.78	Accepted
H1f	Supportive work environment has significant impact on e-learner satisfaction.	.33*	.00	.11	88.7	Accepted
H1g	Justice Environment has significant impact on perceived ease of use.	.38*	.00	.14	121.73	Accepted
H1h	Justice Environment has significant impact on perceived usefulness.	.38*	.00	.15	125.99	Accepted
H1i	Justice Environment has significant impact on e-learner satisfaction.	.34*	.00	.12	98.25	Accepted
H2a	Perceived ease of use has significant impact on e-learning effectiveness	.76*	.00	.58	995.18	Accepted
H2b	Perceived ease of use has significant impact on continuance intention	.70*	.00	.49	704.71	Accepted
H2c	Perceived usefulness has significant impact on e-learning effectiveness	.79*	.00	.62	1153.07	Accepted
H2d	Perceived usefulness has significant impact on continuance intention	.69*	.00	.48	662.04	Accepted
H2e	Learner satisfaction has significant impact on e-learning effectiveness	.76*	.00	.58	994.05	Accepted
H2f	Learner satisfaction has significant impact on continuance intention.	.76*	.00	.47	636.99	Accepted
H3a	E-learning environment has significant impact on e-learning effectiveness	.78*	.00	.61	1114.73	Accepted
H3b	E-learning environment has significant impact on continuance intention.	.76*	.00	.58	997.12	Accepted
H3c	Supportive work environment has significant impact on e-learning effectiveness	.36*	.00	.12	102.45	Accepted
H3d	Supportive work environment has significant impact on continuance intention.	.38*	.00	.14	120.33	Accepted
H3e	Justice Environment has significant impact on e-learning effectiveness	.42*	.00	.18	227.10	Accepted

H3f	Justice Environment has significant impact on continuance intention	.49*	.00	.24	227.10	Accepted

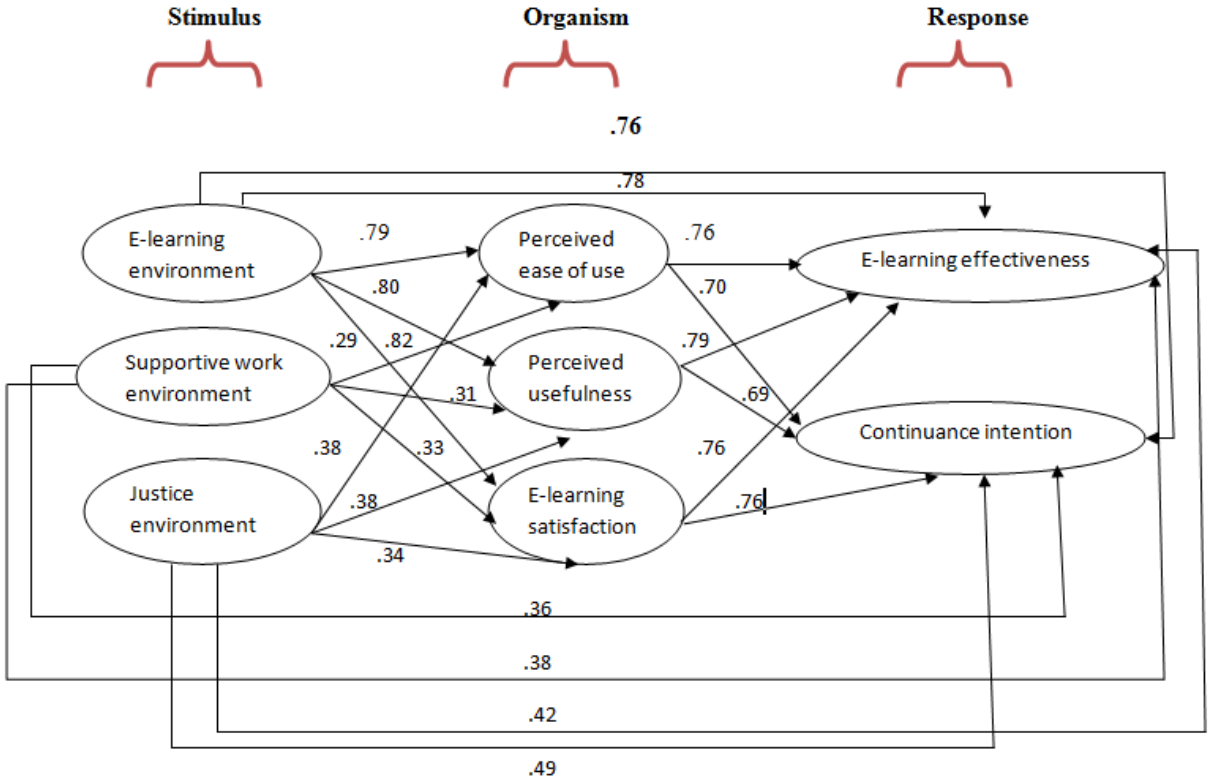


Figure 4.1: Regression Analysis of Direct Paths

Hypothesis #	Hypothesis Statement	$B_{ind}= B_a*B_b$	Result
H4a	Perceived ease of use mediates the relationship between E-learning environment and e-learning effectiveness.	.7*	Accepted
H4b	Perceived ease of use mediates the relationship between supportive work environment and e-learning effectiveness.	.2*	Accepted
H4c	Perceived ease of use mediates the relationship between Justice Environment and e-learning effectiveness.	.5*	Accepted
H4d	Perceived ease of use mediates the relationship between E-learning environment and continuance intention.	.6*	Accepted
H4e	Perceived ease of use mediates the relationship between supportive work environment and continuance intention.	.2*	Accepted
H4f	Perceived ease of use mediates the relationship between Justice Environment and continuance intention.	.4*	Accepted
H5a	Perceived usefulness mediates the relationship between E-learning environment and e-learning effectiveness.	.7*	Accepted
H5b	Perceived usefulness mediates the relationship between supportive work environment and e-learning effectiveness.	.3*	Accepted
H5c	Perceived usefulness mediates the relationship between Justice Environment and e-learning effectiveness.	.6*	Accepted
H5d	Perceived usefulness mediates the relationship between E-learning environment and continuance intention.	.6*	Accepted
H5e	Perceived usefulness mediates the relationship between supportive work environment and continuance intention.	.2*	Accepted
H5f	Perceived usefulness mediates the relationship between Justice Environment and continuance intention.	.5*	Accepted

H6a	Perceived usefulness mediates the relationship between E-learning environment and continuance intention.	.7*	Accepted
H6b	Perceived usefulness mediates the relationship between supportive work environment and continuance intention.	.3*	Accepted
H6c	Perceived usefulness mediates the relationship between Justice Environment and continuance intention.	.5*	Accepted
H6d	Learner satisfaction mediates the relationship between E-learning environment and e-learning effectiveness.	.6*	Accepted
H6e	Learner satisfaction mediates the relationship between supportive work environment and e-learning effectiveness.	.3*	Accepted
H6f	Learner satisfaction mediates the relationship between Justice Environment and e-learning effectiveness.	.4*	Accepted
	Learner satisfaction mediates the relationship between E-learning environment and continuance intention.		
	.Learner satisfaction mediates the relationship between supportive work environment and continuance intention.		
	Learner satisfaction mediates the relationship between Justice Environment and continuance intention.		

Sobel's test was employed to check the hypothesis significance and impact of its impact. All values of beta decreases from certain point to certain point in all cases that indicates partial mediation do exist.

E-learning environment and perceived ease of use have significant impact on e-learning effectiveness (B_{ind}=0.7, p=0.00).Supportive work environment and perceived ease of use have significant impact on e-learning effectiveness (B_{ind}=0.27, p<0.00).Justice environment and perceived ease of use have significant impact on learning effectiveness (B_{ind}=0.54, p=0.00).E-learning environment and perceived ease of use have significant impact on continuance intention (B_{ind}=0.6, p=0.00).Supportive work environment and materialistic perceived ease of use have significant impact on Continuance intention. (B_{ind}=0.2, p=0.00).Justice environment and perceived ease of use have significant impact on continuance intention (B_{ind}=0.4, p=0.00).E-learning environment and perceived usefulness have significant impact on e-learning effectiveness. (B_{ind}=0.7, p=0.00).Supportive work environment and perceived usefulness have significant impact on e-learning effectiveness. (B_{ind}=0.3, p=0.00).Justice environment and perceived usefulness have significant impact on e-learning effectiveness. (B_{ind}=0.6, p=0.00).E-learning environment and perceived usefulness have significant impact on continuance intention (B_{ind}=0.6, p=0.00). Supportive work environment and perceived usefulness have significant impact on continuance intention (B_{ind}=0.2, p=0.00).Justice environment and perceived usefulness have significant impact on continuance intention. (B_{ind}=0.5, p=0.00).E-learning environment and learner satisfaction have significant impact on e-learning effectiveness (B_{ind}=0.7, p=0.00).Supportive work environment and learner satisfaction have significant impact on e-learning effectiveness (B_{ind}=0.33, p=0.00).Justice environment and learner satisfaction have significant impact on e-learning effectiveness. (B_{ind}=0.54, p=0.00.E-learning environment and learner satisfaction have significant impact on continuance intention (B_{ind}=0.62, p=0.00).Supportive work environment and learner satisfaction have significant impact on continuance intention. (B_{ind}=0.3, p=0.00).Justice environment and learner satisfaction have significant impact on continuance intention (B_{ind}=0.4, p=0.00).

5.1. Discussions

It was found in the results of our study that students who were having; autonomous ways with relative actions, animated and colored multimedia instructions, different formats and co-operative instructors, support from instructors/management and institutional justice, were less vulnerable towards easy use of technology, improvements have seen in their work once e-learning system has adopted, and satisfaction could be achieved. In the same way students with independent learning, instructor competency in technology and

instructional methods is considered as the foundation of student's satisfaction from technology.Results also revealed that all these factors put their contribution towards intention to continuance use of systems and effective e-learning by enhancing skills of students.

According to the hypothesis regarding e-learning environment, the results indicated that e-learning environment has a significant and positive impact on perceived ease of use. Positive attitude of instructor would direct users to considered e-learning environment as easy to use. (Lin, 2011). Positive attitude of instructor would direct users to considered e-learning environment as useful (Cheng, 2012; Lee et al., 2009).The result of the study also demonstrated that e-learning environment is a significant predictor of learner satisfaction.

Management support is one of the specific aspects of work environment that is support which broaden the perceptions(Parker et al., 2006).Management support advances perception and attitude towards PEOU and PU. (Daviset al. 1989, Leonard-Barton and Deschamps 1988, Rogers 1983, Fulk et al. 1990, Konradt et al. 2006, Sharma and Yetton 2003).Loads of studies are in accordance with the current study's findings that would show a significant connection among supportive environment with satisfaction. (Joo, Joung & Son, 2014; Aggelidis & Chatzoglou, 2012; Al-Busaidi & Al-Shihi, 2012; Roszkowski & Soven, 2010; Teo, 2009).

Results showed a significant positive relationship between justice environment and perceived ease of use in our study. So we can argue that the students who assume the result matter shows justification, procedures are fair and justness in behaviour from instructors/institutional personals tends to direct users to considered justice environment as easy to use. Results showed a significant positive relationship between perceived ease of use and e-learner effectiveness in our study. On the other hand, the students who considered system easy to use tend to be more easily incline towards increased in intention to use the system in future.

Results showed a significant positive relationship between perceived usefulness and e-learner effectiveness in this study It has been demonstrated in the previous studies and it is inconsistent with prior study that perceived usefulness influence positively towards e-learning effectiveness (Chiu, Hsu, Sun, Liu and Sun, 2005).The study revealed that perceived usefulness has positive correlation with intention to use the system in future. It has also confirmed by previous studies.(Motaghian et al.,2013; Islam ,2013; Chen and Tseng 2012;Chow et al. ,2012; Li et al.,2012; Cheng et al.,2012; Islam ,2012; Sumak et al.,2011; Liu et al.,2010a).

Results showed a significant positive relationship between learner satisfaction and e-learner effectiveness in this study.The study revealed that e-learner satisfaction has positive significant relation with intention to use the system in future. Finding of prior study also showed a significant positive influence of satisfaction on continuance intention. (Chiu et al., 2005).

Findings of current study revealed a significant positive relationship between e-learning environment and effective e-learning.E-learning or virtual environment specifically indicated an increased in effective e-learning or performance comparative to traditional mean (Xu et al. ,2014).On the other hand, proposed study findings indicated that e-learning environment has positive significant relation with intention to use the system in future. It is also in accordance with prior study, for instance; self-paced learning environment provide an opportunities that forced towards intentional behavior outcome(Ajzen, 2005).Therefore in that case, it can easily be accepted that continuance intention of e-learning system may be improved by collaborative, and interactive environment.

It is confirmed by many researchers that support (i.e. technical) in case of e-learning technology is a critical element for use intention (Franklin, 2007; Rogers &Finlayson, 2004).Findings of current study revealed a significant positive relationship between supportive work environment and effective e-learning. On the other hand, proposed study findings indicated that supportive work environment has positive significant relation with intention to use the system in future. It is also in accordance with prior study, for instance; support has a positive relation with satisfaction and effectiveness. (Chen et al., 2007; Harris et al., 2007).

Results showed a significant positive relationship between justice environment and e-learner effectiveness in this study. Our results are consistent with prior findings that showed distributive and procedural justice contributes significant role in satisfaction and continuance intention in e-learning systems. (Chiu; 2007).

In case of mediation, the study is inconsistent with the prior studies as proved by many researchers. It

has been proved that perceived usefulness play a mediating role. (Zhang et al.,2012; Schierz et al.,2010; Revels et al.,2010; Lee et al.,2012; and Kim and Mirusmonov.,2010). Academic and computer skills and, interaction among class fellows or a teacher are the influencing factors of learner satisfaction, in addition, influencing e-learning effectiveness. (Hong, 2002).

5.2. Implications

This research would add important insights to the intention of individual towards particular technology and individual effectiveness towards e-learning systems. This study examined the link between various internal and psychological factors and influences to improve the knowledge related to outcome (continuance intention to use and e-learning effectiveness

This study would help to improve the understanding of the practitioners. The academic institutions, researchers, system designers, and system developers are working consistently to find better ways to attract the consumers (i.e. students).The current research study possibly will assist practitioners and researchers as they would be able to understand what are the factors that have lean individuals to continuance use of e-learning technologies and with their particular response towards system of e-learning. Through acquiring continuance use factors, practitioners could develop strategies and processes with which it is employed.

Educational institutions can use our results by enhancing thought about what make learners to accept and continuance use the particular e-learning courses. Management and instructors of an institution could boost student's e-learning use by establishing interactive, supportive and full of just environment. Hence, institution could able to build their procedures, polices, and rules in more attractive way. The study results can guide university staff to help their students verify and increase perceptions in a positive way by e-learning systems. This may helpful in developing user-friendly and oriented content of e-learning and learning management systems. The study is highly significant as by applying results, the virtual institutions could promote supportive conditions, and perceptions to achieve satisfaction from their customers (i.e. students) so to get an increased in use of IT.Due to increased horizon of e-learning, commercialized educational content creators have been a part of market specifically in case of introductory courses in different number of institutions. The content provider could be instructor, their support, justice behavior within e-learning environment (e.g. mail of content module to all students without prejudices) will result in increased use of system and learner satisfaction, in turn lead towards e-learning effectiveness (e.g. improving and enhancing skills).In short, the present study would put content provider to think and focus on developing content during their content developing process.

To improve continuance use intention of users, programmers and developers can build e-learning systems, modern interfaces and friendly screens. By putting a great heed on learners needs and backgrounds (e.g. management systems) would be accommodating for enhancing and maintaining their technologies. Business educators would improve students stimulating aspects (e-learning environmental factors including justice, support, self-paced, and positive attitude of instructors) towards using advanced business technologies and software that will lead towards higher level and increased student's effectiveness and performance. It is important to consider the effectiveness regarding learning effect. (Romiszowski, 2004).

Designers can focus on design rich multimedia capacities so that the system could be easy to use and continuance use of that system will achieve easily by particular users(i.e. students).Well-designed interface would support learners goals(Liu et al., 2010), ultimately will lead towards designers end. Multimedia instructions, for instance; interactive videos in system enhance control over learning methods and enhanced self-paced learning (Berge, 2002; Zhang et al., 2006), that will lead towards continuance use of technology/system. Therefore, the current study is helpful for designers to inculcate self-controlled mechanisms within their technologies that will lead to easy use and more effective direction. More personalized mechanisms may applied by designers in their designing process so to increase learners acceptance of that technology.

5.3 Limitations and Future Research

There are several limitations in the current study that might possibly affect the findings.

Firstly, the current study has investigated and collects data from only one university across Pakistan, it is recommended to collect the data from different universities at the same level with different LMS so to increase the findings generalizability. Secondly, the proposed study model is cross-

sectional that measure intention and effectiveness of users (i.e. students) at single point in time that means it's a short term snapshot, therefore longitudinal studies should be applied for future because perceptions possibly vary with the passage of time and to increase the validity of current proposed model. Thirdly, in the study we used a survey design that was used to see the impact of environmental critical factors of e-learning (e-learning environments, supportive environments, and justice environments,) and psychological influences (perceived ease of use, perceived usefulness, and student satisfaction) influences on students intention and effectiveness, here is a need to see the behavior and intention of individual instructor for further study. Fourthly, the study technique (i.e. non-probability convenience sampling) was used to collect data, which limits the generalization of findings therefore, further research may use other sampling techniques to improve the generalization of the results. Another important limitation is that the present study couldn't focus on comparative study among different institutions, hence, the future research should be conducted on comparative institutional bases that would function on the same capacity.

5.4. Conclusion

The present study concludes the various preceding circumstance of effective e-learning and continuance intention – E-learning environment, supportive work environment, justice environment, and perceived ease of use, perceived usefulness, and learner satisfaction. The study identified and explains theoretical background of proposed model including technology acceptance model with stimulus-organism-response model that is considered as the basic conceptual model for TAM. The hypotheses were developed plus tested to examine study model. The findings suggest that the environment stimulus (i.e. self-paced environment, instructor-led, interactional environment, supportive environment and justice environment) have a significant impact on organism (i.e. perceived ease of use, perceived usefulness, and learner satisfaction), which in turn impacts consumer's response – students response (i.e. effective e-learning and continuance intention). Student's response towards learning environment is also favorable towards their learning activities. Furthermore, the findings suggests that by developing the environment such as self-paced learning which is autonomous itself, instructional learning that is with multimedia, and teacher role with respect to his/her interaction, support from management and instructor would improve effectiveness and learners intention to continue with the same technology because it is easy to use, practically useful and satisfaction would gain from that technology. Technology drive would determine increased in effective learning that is argued by many researchers, albeit, on the other hand it is argued that the issue of technology leading learning influence remains an open discussion. (Clark, 1994).It is argued that technology matters but the attitudes towards particular system worth ahead. These environmental constructs are foundation to achieve e-learning success such as to adopt the system in future and an effective outcome.

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