Global Journal of Computer Science and Technology
Software & Data Engineering
Volume 12 Issue 15 Version 1.0 Year 2012
Type: Double Blind Peer Reviewed International Research Journal
Publisher: Global Journals Inc. (USA)
Online ISSN: 0975-4172 & Print ISSN: 0975-4350

Information System Development and Use Practices in Khyber Pakhtoon Khwa (K.P.K) Pakistan (An Empirical Study of the Demographics Impacts)

By Dr. Ghulam Muhammad Kundi & Dr. Allah Nawaz

Gomal University Dera Ismail Khan, K.P.K, Pakistan

Abstract - There is no doubt in the reality that Information Technology (IT) is revolutionizing organizations on unprecedented proportions thereby stimulating others to adopt it but despite this fact research indicates that a large number of information system development projects are failing to achieve their objectives in toto. Thus, there are partial and total failure stories of IT projects. Furthermore, information system (IS) failures are common to all types of organizations: public, private or small, medium and large irrespective of operating in a developed or developing country.

The research on IS failure frequently cites non-technical issues as the most decisive factors in the success or failure of any IT project. That is, IT can do miracles but all this requires 'adequate management of the 'demographics of an IT project.' Non-technical critical success and failure factors are catching wider attention during the last decades among the IS research community.

One can understand that technology can be imported but not the demographic of the organization thus, non-technical issues are 'local in nature, structure and intensity,' which definitely need local studies of ISD and use practices so as to dig-out 'customized ISD and use process. This research is an effort in the same line of thinking.

Keywords : information technology (IT), information system (IS), information system development (ISD), perception about IT, ISD approaches & methodologies, project management, ISDLC, success or failure, good and bad experiences, KPK pakistan.

GJCST-C Classification : H.4.0

Strictly as per the compliance and regulations of:

Information System Development and Use Practices in Khyber Pakhtoon Khwa (K.P.K) Pakistan

(*An Empirical Study of the Demographics Impacts*)

Dr. Ghulam Muhammad Kundi [α] & Dr. Allah Nawaz [σ]

Abstract - There is no doubt in the reality that Information Technology (IT) is revolutionizing organizations on unprecedented proportions thereby stimulating others to adopt it but despite this fact research indicates that a large number of information system development projects are failing to achieve their objectives in toto. Thus, there are partial and total failure stories of IT projects. Furthermore, information system (IS) failures are common to all types of organizations: public, private or small, medium and large irrespective of operating in a developed or developing country.

The research on IS failure frequently cites non-technical issues as the most decisive factors in the success or failure of any IT project. That is, IT can do miracles but all this requires 'adequate management of the 'demographics of an IT project.' Non-technical critical success and failure factors are catching wider attention during the last decades among the IS research community.

One can understand that technology can be imported but not the demographic of the organization thus, non-technical issues are 'local in nature, structure and intensity,' which definitely need local studies of ISD and use practices so as to dig-out 'customized ISD and use process. This research is an effort in the same line of thinking.

Keywords : information technology (IT), information system (IS), information system development (ISD), perception about IT, ISD approaches & methodologies, project management, ISDLC, success or failure, good and bad experiences, KPK pakistan.

I. Introduction

Developing a computer-based information system (CBIS) is not simply the purchase and installation of hardware and software (Rockart, et al., 1996; Smith, 1998; Walsham, 1993, 2000; Turban et al., 2004). It rather goes beyond it to the problems of people, organization and the context (Avgerou and Cornford, 1998); Segars and Grover, 1996); Dann et al., 1998). Research findings assert that an IS development (ISD) is a 'social process' (Lyytinen, 1987; Checkland, 1991; Walsham, 1993) thereby considering all the human, organizational, contextual and technological issues as in case of any organizational project.

Author α σ : Assistant Professor Department of Public Administration Gomal University Dera Ismail Khan, K.P.K, Pakistan.
E-mails : kundi@gu.edu.pk, profallahnawaz@yahoo.com

Human challenges include difference of perceptions about IT among the developers and users due to several gaps of education, communication, culture, motivation and satisfaction (see for example, Argyris, 1971; Kaasboll, 1997; Dann et al., 1998; Glass, 1998). The Nature (public or private), policies and procedures, the IT maturity, power structures etc., make up some of the issues emanating from the organization itself (see for example, Land et al., 1992; Ennals, 1995; Segars and Grover, 1996). Environment or context is significant since its change altogether changes requirements for the success/failure of an IT project (Flowers, 1997). Herzberg's two factors theory suggests that job-satisfiers relate to the job-contents while job-dissatisfiers emerge from the job-context (Luthans, 1995:149). Technology is not widely quoted as big deal but IT professionals are frequently cited as the toughest challenge in an IT project due To their intellectual distance from the nature and requirements of an organization (Argyris, 1971; Segars and Grover, 1996).

All of these challenges crop-up during different stages of an ISD life cycle (ISDLC). A global format for this cycle is: IS planning, requirements capture and analysis, design, implementation, use and maintenance and up-gradation (Avison and Wood-Harper, 1990). The intensity of issues vary from one stage to another for example, communication gap between developers and users at planning level is minor issue as compared to the same at requirements capture, training and use levels (Kaasboll, 1997). Likewise, organizational factors are less threatening during the initial phases of ISDLC but once new system is in action 'IT-business-alignment' (Burn, 1996; Poulymenko and Holemes, 1997) emerges as a big issue, which is widely reported as the major cause of many IS failure (ISF) cases around the world (see for example, Ewusi-Mensah and Przasnyski, 1991, 1994, 1995; Ennals, 1995; Glass, 1998).

In nutshell, IS community is unanimous on admitting that it is not technology-related issues rather human, organizational and contextual variables which make or break the future of an IT project (see for example, Avison and r-Harper, 1990; Poulymenakou and Holmes, 1996). Furthermore, all of these factors are

purely local in nature requiring customized-research projects to unearth indigenous footage of the impacts from these variables on the development trajectory of an IT projects.

The objectives of this study were to o unearth the ISD and use practices in KPK, Pakistan and local versions of challenges to the ISDLC from human, organizational, contextual and technology factors besides management concerns in the domestic IT-projects and to build-up a customized set of guidelines for handling an IT-project's development-trajectory successfully in education and health sectors of the economy.

This is the first project of its kind in KPK, Pakistan that unearthed purely 'localized and customized' problems and solution models for IT-projects. Likewise, the study will be contributive both in improving ISD and use practices as well as help in minimizing the chances of IS failure.

Since IT is indispensable to organizations but research warns that inadequate management of IT-projects result either into partial failure or total termination of the efforts. The question of this research therefore, was 'How far local management is succeeding in identifying and handling challenges to the ISD and use process in the indigenous context of KPK Pakistan?

II. Review of the Relevant Literature

The literature on IS development and use process is scattered across the organization, management, information-systems and computer studies. Researchers have identified critical success and failure factors (variables) about different aspects and stages in IT projects (see for example, Ennals, 1995; Beynon-Davies, 1995; Beynon-Davies and Lloyd-Williams, 1999). There is substantial evidence on the role of organizational, human and contextual factors in the whole process of infusing IT into organizational structure and culture (Walsham, 1993:25).

a) Demographics of ISD process

ISD is a social process therefore, it is certainty affected by all the surrounding factors. Organizational size and structure, policies, management style, methods and procedures, rules and regulations have to be taken into account at every step in the ISD and use process (Segars and Grover, 1996; Smith, 1998). Likewise, a fear-based organizational culture (Poulymenakou and Holmes, 1996) hinders a transparent IT project since people hesitate to admit mistakes and failures (Beynon-Davies, 1995; Warne, 1997; Beynon-Davies and Lloyd-Williams, 1999). An information system is designed, created, operated and used by humans thus, humans reflect in every move and dimension of the ISD and use trajectory (Sauer, 1993). Although technology (hardware, software and professionals) is neither an end nor all in the story of computerizing an organization, however, their availability and usability may trigger many questions. It is however, widely documented that IS developers (professionals) can create problems if developer-user gaps are not addressed early (Kaasboll, 1997).

b) Perceptions about IT

Life is what one believes in so perceptions of technology have bearing upon how they are used (see for example, Brooke, 1995; Collins and Bicknell, 1997). The perceptions of rich and poor nations have shifted away from economic milestones to knowledge yardsticks. Now information-rich and information-poor are the criteria to determine power of the nations. So where does a nation perceives itself on the continuum of digital-divide, reflects the use-level of IT in that country. In the organizational context, there are some kinds of 'silver-bullet' and 'leading-edge' syndromes (Ennals, 1995; Glass, 1998)' about IT expressing the belief that IT is a panacea for all management ills, while others disbelieve in any miraculous contributions of this technology (Baskerville and Smithson, 1995). Technocrats like accountants, engineers and scientists view IT as a commodity but mangers vision it, as a differentiator for the business.

c) Approaches and Methodologies

Several approaches have been theorized, exercised and reduced into black-n-white for computerization efforts (Hirschheim and Klein, 1989; Wynekoop and Russo 1995; Avison and Fitzgerald, 1995; Avison and Shah, 1997). They are grossly categorized into hard and soft approaches. Some researchers, particularly those hailing from computer science, suggest highly structured and scientifically managed approaches assuming that an IT project is a technical venture (Fitzgerald, 1996). Business managers however, perceive it as a business-project therefore prefer soft approaches so that the social nature of the development trajectory could be entertained (Walsham, 2000). These extremes have been compromised by the advocates of 'socio-technical' approaches, which assert that both technical and social management skills are required to handle IT-related efforts successfully.

Under hard and soft approaches, structured and unstructured ISD methodologies have been developed respectively. SSADM and STRAIDS (Weaver, 1993; DeMarco, 1979; Fitzgerald, 1996) are the structured examples while ETHICS (Mumford and Weir, 1979) and MultiView represent the soft methodologies. SSADM is most sophisticated and popular option. It is the official methodology for the public computerization projects in many countries, such as UK. Structured methodologies create technical and scientific behavior in the developers by offering techniques like highly structured DFDs, and CASE tools. Soft methodologies, on the other hand, give parallel importance to the

demographies like organization, humans and context. For example, ETHICS stands for effective technical and human implementation of computer systems. MultiView demands multi-view perception and treatment of computerization projects.

d) Project Management

An ISD and use process needs to be managed adequately otherwise leading-edge technology and huge budgets may gather dust. It is said that this adequacy is possible if it is recognized that "project is less a matter of understanding constraints and more a function of personal skills (Elton and Justin, 1998). Researchers have unearthed several IT-project management strategies. It is now squarely admitted that an IT project is like any other business project (Smith, 1998) therefore, all technical, organizational, human and contextual dimensions have to be brought on the table for visualizing a holistic view of the project.

e) ISD Life Cycle

An ISD process never ends since it demands constant upgrading thus, a cycle continues forever in the form of recursive stages (Avison and Fitzgerald, 1995; Avison and Shah, 1997; Turban et al, 2004:235). Several models are given in the literature to postulate a standard set of stages for an IT project. There are linear, waterfall and spiral models of an ISDLC. User-participation have widely been researched and identified as the critical factor to IT-project development and ultimately system's use (see for example, Mumford, and Henshall, 1979; Mumford, 1997). New CBIS changes the power structures therefore; losers and winners are created where losers naturally resist changing (see for example, Avison and Wood-Harper, 1990). An ISD has to be protected from the 'political maneuvering' or power struggle during the whole cycle of ISD otherwise, there is ample evidence on many IS failures, which were politically devastated (see for example, Markus, 1981, 1983; Drummond, 1995; McGrath, 1997).

f) Success or Failure (Good and Bad Experiences)

Literature is filled with stories of IT projects but unfortunately most episodes are about the failure because successes have little for research therefore reported occasionally (Glass, 1998). Failures are the repositories of the research questions for problem-solutions and improvement (Ewusi-Mensah and Przasnyski, 1991, 1992, 1994; McGrath, 1997). It has been found that the risk of IS failure is equal to all the small, medium and large enterprises in the developed and developing worlds and operating either in public or private sectors. IS failure have been extensively researched with the findings that there can be correspondence, process, system and expectation failures or project abandonment and terminations (Nawaz et al, 2007; Lyytinen and Hirschheim, 1987; Sauer, 1993; Ewusi-Mensah and Przasnyski, 1991, 1994, 1995). Whatever the name and nature of failure, there is broader agreement on two things: a. the same mistakes are committed in every IS failure case (Collins and Bicknell, 1997; Glass, 1998; Sauer, 1999) and b. the social, organizational, political and human factors outstrip the technical problems (Avgerou and Cornford, 1998).

III. Research Design

a) Survey Approach

Survey research is excessively used in information systems research (see for example, Galliers, 1992; Ewusi-Mensah Przasjyski, 1995; Olsen, 1997:23) as well as social research (Babbie, 256). Survey is preferred because in contrast to other approaches like, experiment, archival analysis and case studies, researcher can find answers to all five questions (who, what, where, how many, and how much) of the study (Yin, 1994:6) and thereby develop a comprehensive view of the problem. Furthermore, information systems as a field embodies a mixture of scientific, technical, organizational, societal and psychological aspects therefore, it is a multi-perspective discipline, which require 'pluralism of research methods' (Wood-Harper, 1985:169-191).

b) Population and Sampling

For the study of IS development and use practices in KPK Pakistan, Education and Health sectors were chosen for study on the pretext that 'both sectors have public and private organizations. Furthermore, Peshawar and DIKhan were sleeted for study on the ground that both the cities are totally different with reference to demographic variables. For example, Peshawar is a city of more than five million people while DIKhan has only 0.8m population. Likewise cities are extremely different in their organizational size and number, technological opportunities and applications and educational environment.'

Table 3.1 : Population & Samples from DIKhan, & Peshawar

	Sector	Org: Type	DIK	Pesh:	S-tot	Sample-Size		
						DIK	Pesh:	Tot
1	Health	Public	360	617	977	25	37	62
		Private	210	458	668	16	26	42
	S-tot		570	1075				104
2	Education	Public	625	720	1345	35	52	87
		Private	275	480	755	16	33	49
	S-tot		900	1200				136
3	Consultants		247	380	627	13	24	37
		Total	1717	2655	4372	105	172	277

Table 3.2 : Stratified Samples (Area-by-Sector Samples)

Area-Wise Sectors	Population (Strata)	Standard Deviations	Sample Sizes
Public Sector Health DIK	360	0.8	25
Public Sector Health Peshawar	617	0.7	37
Private Sector Health DIK	210	0.89	16
Private Sector Health Peshawar	458	0.66	26
Public Sector Education DIK	625	0.66	35
Public Sector Education Peshawar	720	0.87	52
Private Sector Education DIK	275	0.69	16
Private Sector Education Peshawar	480	0.8	33
Consultants DIK	247	0.6	13
Consultants Peshawar	380	0.78	24
TOTAL	4372		277

Table 3.3 : Sample Selection Procedures

Sample (FINITE population)

Pilot Study Statistics

Standard Deviation (□)	0.72
Standard Error (E)	0.082
Z value at 95% Confidence	1.96
Sample Population N	4372
Target Population	INFINITE
Sample Size	277

Formula

$$n = [\sigma^2/((z^2/E^2)+(\sigma^2/N))]$$

Stratified Samples

Pilot Study Statistics

	N	SD	N
Health (public) DIK	360	0.8	24
Health (public) Peshawar	617	0.7	37
Health (private) DIK	210	0.89	16
Health (private) Peshawar	458	0.66	26
Education (public) DIK	625	0.66	35
Education (public) Peshawar	720	0.87	53
Education (private) DIK	275	0.69	16
Education (private) Peshawar	480	0.8	33
Consultants DIK	247	0.6	13
Consultants Peshawar	380	0.78	25
N =	4372	n =	277

Formula

$$n_a = [(nN_a\sigma_a)/((N_a\sigma_a)+(N_b\sigma_b)+(N_c\sigma_c))]$$

c) Data Collection and Analysis

i. *Data Collection Methods*

Given the social-cum technical and global-cum-local nature of the topic, data was collected from all the possible sources to squarely cover all the related dimensions so that a comprehensive view of both the problem and solution could be envisaged.

1. *Literature Survey:* After preliminary literature survey for pilot study, the same was continued in the main research for two purposes: a. optimizing the selected variables and b. data on the topic.

2. *Self-administered Questionnaire:* It was the main inflow of primary data through a sophisticated and standardized set of questions arranged in a well-structured format. The instrument was successfully used in the pilot study. The same was applied in the main study.
3. *Follow-up Interviews:* Questionnaire covered the main variables; however, follow-up interviews were conducted for: a. collecting data that was missing in the questionnaire and b. gather data, which could not be captured through the questionnaire.

ii. *Data Analysis Tools*

Specific data analysis tools were used to carve-out meaning from the collected data. Tabulation was the top tool for 'data-reduction' as well as presentation of the findings. The tools used for analysis of the data in the study are given below:

1. *Descriptive Tools:* Besides textual analysis of secondary data, statistical descriptive-tools were used to explore and present: a. Respondents' profile (demographies) and b. Description of all the research-variables.
2. *Inferential Tools:* Correlation and regression analysis and significance tests were used to 'derive' meaning from data.

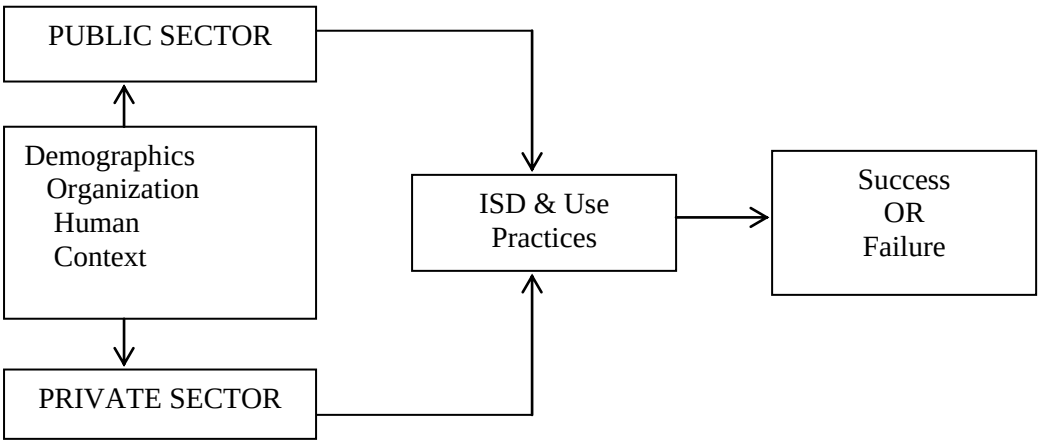
d) Operationalization of the Concepts

Table 3.4 : Operationalized Variables

	Variables	Attributes	Code
1	Human Factors	Perceptions about digital divide, silver-bullet syndrome, usability, commodity vs. differentiator, leading-edge syndrome, Organizational motivation techniques for IT, Perceptual gaps between developers and users.	HF
2	Organization Factors	Nature (public/private), Size, Structure, Objectives, and culture of the organization. IT maturity (experience with ISD and use) The mechanism for developer-user interaction Political/power struggles.	OF
3	Technological Factors	Hardware, Software and IT professionals. Availability, expenses, usability and possibility to upgrade the above items. Developers' organizational knowledge	TF
4	ISD	Government and Institutional IT Policies; User Needs Analysis; User Participation, Training; Implementation; Maintenance; and Evaluation in ISD, ISD approaches, Methodologies, Project management, User participation, developer-user communication, user training, Management of the resistance to change.	ISD
5	IS Use	Perceived Ease of Use (PEU); Perceived Usefulness (PU); Volume of Use; Experience with IT; User-developer- communication	USE
6	Perceptions	IT: the Problem-Solver; Digital Divide; and Socio-economic Impacts of IT.	PRC
7	Problems	Problems of IT Projects Development, Use and User-Satisfaction	PRB
8	Satisfaction	User-Satisfaction IT Projects Development and Use Practices.	STF
9	Opportunities	Opportunities for IT Project Success in K.P.K.	OPR
10	Success/ Failure	Definition of success/failure, Degree of success and failure, Ratio of success and failure, Critical success and failure factors, Escalation in IT projects.	SFF

e) Theoretical Framework

Figure 3.1 : Schematic Diagram of the Research-Model



f) Research Hypothesis

A set of hypothesis was developed on the basis of relationships postulated in the theoretical framework. Table 3.5 provides the detail.

Table 3.5 : List of Working Hypothesis

	Hypothesis	*Statistical Tools Applied*
1	The Public organizations are under-using IT potentials in comparison to private sector.	t-test
2	Escalation (time-delays, cost-overruns, compromise on lesser objectives) of IT projects is more common in public organizations than in private enterprises.	t-test
3	IT-people overestimate while non-IT workers underestimate the role of IT in the organizations.	t-test
4	Public sector is less optimistic about the role of IT than private sector.	t-test
5	Professors, doctors and consultants view IT differently.	ANOVA
6	Experience of non-IT workforce is negatively correlated with perceptions about IT.	Correlation analysis
7	Higher the perceptions about IT, greater are the chances/perceptions of success in IT projects	Simple Regression
8	The organizational, human, contextual and technological factors collectively determine the variation in the success/failure of an IT-project.	Multiple Regression

g) Pilot Study

All the above constructs and methods were used in the pilot study with the objectives of:

- Testing the research tools (particularly constructs). As a consequence several attributes were pinpointed by the respondents, which have been included in the questionnaire.
- Computing statistics to calculate 'sample-size' for the main study.

h) Reliability of Instrument

The overall reliability of Cronbach's alpha was estimated at 0.9288, with 277 cases and 42 survey items. This value obviously exceeds the required minimum threshold for the overall Reliability-test, i.e. 0.7 (Koo, 2008).

IV. Analysis of the Empirical Data

a) *Descriptive Statistics*

Table 4.1 : Description of the Research Variables

Variables	Min	Max	Mean	Rank	Std. Deviation
HF	3.17	5.44	4.5559	4	.47526
OF	3.11	4.88	3.8071	5	.41125
TF	3.21	6.64	4.6851	3	.57352
ISD	3.50	5.45	4.7106	3	.46861
USE	2.13	6.21	5.6248	2	.78603
PRC	3.27	5.31	4.5234	1	.63711
PRB	2.23	5.11	4.3321	2	.56241
STF	2.47	5.39	4.5005	3	.77512
OPR	3.14	5.21	4.3101	2	.46327
SFF	2.22	6.11	5.5137	2	.67512

Table 4.2 : List of the Demographic Variables and Attributes

	Variables	Working Definitions (Attributes)	Code
1	Respondent-Type	Professors, Doctors, Consultants	RTP
2	Sector	Public and Private	PPR
3	Nature	Health/Education	HED
4	Gender	Male/Female	GDR
5	ICT-Background	IT People/Non-IT Workers	CNC
6	Age	Age of the Respondents	AGE
7	Experience	Using Computer Since	EXP
8	Designation	Designation of the Professors, Doctors and IT Consultants	DSG
9	City	Peshawar/Dera Ismail Khan	CTY

i. *Demographic Impacts*

The impacts of demographics on ISD and use practices are well documented by Wims & Lawler, 2007; Mehra & Mital, 2007. The developers of IT projects are constantly advised by the experts to address demographic differences regarding the development and use of IT projects for generating and sustaining positive user attitudes for effective uses of IT (Gay et al., 2006), which are based on the user-characteristics of gender, age, educational level, computer skills, experience with use of IT besides users styles, personal goals and attitudes, preferences, cultural background, experience, motivation (Moolman & Blignaut, 2008). The tables 4.3, 4.4 and 4.5 elaborate the statistics on demographic variables:

Table 4.3 : Type of Respondent, IT-people/Non-It Workers, Sector and Gender's Impacts

	Type of Respondent (df 2/351 = 3.0)		IT people/Non-IT Workers (df 352= 1.96)		Public/Private (df 352= 1.96)		Health//Education (df 352=1.96)		Gender (df 352= 1.96)	
Variables	F	p-Value	Cal. T-Val	p-Value	Cal. T-Val	p-Value	Cal. T-Value	p-Value	Cal. T-Val	p-Value
HF	5.417	.002	11.025	.000	-3.256	.002	11.024	.000	8.112	.000
OF	6.305	.001	10.946	.000	-3.829	.000	11.244	.000	4.235	.000
TF	26.032	.000	8.304	.000	-2.164	.018	9.404	.020	1.784	.050
ISD	.710	.331	12.556	.000	-4.873	.000	13.843	.000	5.822	.000
USE	25.374	.000	11.877	.000	-2.610	.006	14.565	.000	4.621	.000
PRC	10.230	.000	8.335	.000	-1.132	.207	10.351	.000	5.856	.000
PRB	12.111	.000	7.214	.000	-2.153	.017	12.240	.000	5.745	.000
STF	5.316	.001	10.021	.000	-4.762	.000	10.451	.000	5.711	.000
OPR	21.651	.000	10.835	.000	-3.651	.000	8.5313	.000	4.332	.000
SFF	22.263	.000	7.203	.000	-2.053	.017	8.338	.021	1.673	.040
	ANOVA		t-Test		t-Test		t-Test		t-Test	

Table 4.4 : Age, Experience and Qualification's Impacts

	Age (df 352= 1.96)		Exp with Computer (df 352= 1.96)		ICT-Q (df 352= 1.96)	
Variables	Cal. T-Val	p-Value	Cal. T-Val	p-Value	Cal. T-Val	p-Value
HF	-.204	.838	5.146	.000	7.271	.000
OF	-.129	.897	6.779	.000	9.513	.000
TF	1.219	.224	6.333	.000	5.691	.000
ISD	.127	.899	4.308	.000	12.742	.000
USE	-2.752	.006	5.363	.000	9.132	.000
PRC	.002	.998	6.012	.000	8.533	.000
PRB	1.331	.231	6.232	.000	4.580	.000
STF	-.201	.827	5.235	.000	6.161	.000
OPR	.133	.888	5.662	.000	8.402	.000
SFF	-211	.828	4.035	.000	6.160	.000
	t-Test		t-Test		t-Test	

Table 4.5 : City, Use of IT Since, Designation (Professor, Doctors and IT Consultants) Impacts

	City (df 352=1096)		Use of IT Since (df 352= 1.96)		Designation (Professors) (df 352= 3.0)		Designation (Doctors) (df 1/134=3.0)		Designation (IT Consultants) (df 352= 310)	
Variables	Cal T-Value	p-Value	Cal. T-Val	p-Value	F	p-Value	F	p-Value	F	p-Value
HF	-4.722	.000	-1.887	.460	-3.665	.002	.743	.920	.812	.710
OF	-3.446	.000	-2.055	.041	-.734	.842	2.488	.080	3.124	.011
TF	-.584	.377	-1.271	.157	1.264	.770	3.404	.000	1.424	.051
ISD	-1.610	.085	-3.041	.003	1.873	.233	.0239	.721	1.771	.021
USE	-3.641	.399	-1.666	.386	1.473	.366	.329	.730	1.521	.003
PRC	-4.030	.010	-1.244	.202	1.321	.273	1.351	.022	1.745	.061
PRB	-4.611	.000	-1.776	.461	-3.554	.001	.732	.911	.811	.711
STF	-3.335	.000	-2,043	.041	..635	.001	2.377	.070	3.013	.010
OPR	-1.434	.000	-2.154	.040	-3.556	.002	.732	.900	.701	.611
SFF	-.475	.000	-2.144	.156	1.153	.711	3.303	.000	1.346	.050
	t-test		t-Test		ANOVA		ANOVA		ANOVA	

b) Hypothesis Testing

Hypothesis No.1: The Public organizations are under-using IT potentials in comparison to private sector.

Results of independent sample t-test are shown in the below tables. As may be seen, the difference in the means of 3.65 and 2.58 with the standard deviations of .51 and .47 for the public and private respectively on the IT-potentials as IT use is significant. Similarly, calculated t value 14.234 in table No. 4.6 is greater than the tabulated t value 1.960, thus H_0 is not substantiated, which validates that public sector is under using IT potentials in comparison to private sector.

Group Statistics

	Nature	N	Mean	Std. Deviation	Std. Error Mean
IT Potentials	Public	149	3.6577	.518702	.03383
	Private	128	2.5812	.47114	.03541

Table 4.6 : Represents Groups Statistics for Hypothesis No. 1

a. Grouping Variables: Public, Private
b. Testing Variable: IT-Potentials

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
IT Potentials	Equal variances assumed	13.068	.000	14.324	398	.000	.87660	.06430	.86029	1.21311
	Equal variances not assumed			15.963	232.541	.000	.87660	.05817	.87210	1.10220

Table 4.7 : Represent the Results of Independent Sample t-test for Hypothesis No. 1

Hypothesis No.2: Escalation (time-delays, cost-overruns, compromise on lesser objectives) of IT projects is more common in public organizations than in private enterprises.

Below tables show the results of independent sample t-test for 2nd hypothesis. The difference in the means of 2.41 and 1.55 can be seen with the standard deviations of .47 and .31 for the public and private respectively for the escalatory behavior (time-delays, cost-overruns, compromise or lesser objectives for IT use is significant. As calculated t value 16.573 in table No. 4.9 is greater than the tabulated t value 1.960, thus H_0 is rejected.

Group Statistics

	Nature	n	Mean	Std. Deviation	Std. Error Mean
Escalation	Public	149	2.4174	.47104	.02817
	Private	128	1.5511	.31115	.02439

Table 4.8 : Represents Groups Statistics for Hypothesis No. 2

a. Grouping Variables: Public, Private
b. Testing Variable: Escalation

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	T	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Escalation	Equal variances assumed	38.919	.000	16.573	398	.000	.75712	.04891	.67099	.86330
	Equal variances not assumed			16.591	350.826	.000	.77623	.03726	.69387	.84042

Table 4.9 : Represent the Results of Independent Sample t-test for Hypothesis No. 2

Hypothesis No.3: IT-people overestimate while non-IT workers underestimate the role of IT in the organizations.

Results of independent sample t-test are shown in the below tables. As may be seen, the difference in the means of 3.14 and 2.03 with the standard deviations of .56 and .47 for the IT people and Non It workers respectively on the Role of IT in organizations is significant. As calculated t value .891 in table No. 4.11 is less than the tabulated t value 1.960, so H_0 hypothesis of the study is substantiated.

It can be inferred from the results that there is gap between IT people and Non IT workers with reference to role of IT in an organization which necessitates the education and intimate relations, corporation and coordination among these two groups

to development more understanding of the organization and management, technical competency and skills in their respective fields and to effectively use IT as competitive weapon for the accomplishment of organizational goals and objectives through innovation, growth, cost effectives, alliance and mergers.

Group Statistics

	User Types	N	Mean	Std. Deviation	Std. Error Mean
Role of IT in Org.	IT-People	149	3.1442	.56522	.04276
	Non-IT Workers	128	2.0333	.47731	.05241

Table 4.10 : Represents Group Statistics for Hypothesis No.3

a. Grouping Variables: IT-People, Non-IT Workers
b. Testing Variable: Role of IT in Org

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	Df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Role of IT in Org.	Equal variances assumed	.009	.924	.891	398	.550	.03878	.06700	-.10302	.16258
	Equal variances not assumed			.880	335.825	.550	.03878	.06770	-.10338	.16294

Table 4.11 : Represent the Results of Independent Sample t-test for Hypothesis No.3

Hypothesis No.4: Public sector is less optimistic about the role of IT than private sector.

Results of independent sample t-test for the fourth hypothesis are shown in the below tables. As may be seen, the difference in the means of 1.64 and 1.37 with the standard deviations of .45 and .34 for the public and private respectively on the Role of IT in organizations is significant. Where calculated t value 15.097 in table No. 4.13 is greater than the tabulated t value 1.960, Thus H_0 is not substantiated. This implies that private sector is more optimistic about the role of IT in organizations for maximum efficiency and effective utilization of both the human and material resources of the organization.

Group Statistics

	Nature	N	Mean	Std. Deviation	Std. Error Mean
Role of IT in Org.	Public	149	1.6437	.45367	.01545
	Private	128	1.3772	.37160	.02302

Table 4.12 : Show Group Statistics for Hypothesis No.4

a. Grouping Variables: Public, Private
b. Testing Variable: Role of IT

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	Df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Role of IT in Org.	Equal variances assumed	2.501	.115	15.097	398	.1400	.22762	.03662	.14397	.31827
	Equal variances not assumed			15.699	238.754	.1430	.23762	.04169	.15548	.31975

Table 4.13 : Represent the Results of Independent Sample t-test for Hypothesis No.4

Hypothesis No.5: Professors, doctors and consultants view IT differently.

The results of the 5th hypothesis are given in the below table. Since there are more than two groups and IT is measured on an interval scale, ANOVA is appropriate to test this hypothesis. If we look into the table, we find *df* in the 3rd column refers to the degrees of freedom, and each source of variation has associated degrees of freedom. For the between-groups variance, $df = (K-1)$, where K is the total number of groups or levels. Because there were three groups, we have (3-1) = 2 *df*. The *df* for the within groups sum of squares equals $(N-K)$, where N is the total number of respondents and K is the total number of groups. As there were no missing responses, the associated *df* is (277-3) = 276.

$$F = \frac{\text{MS explained}}{\text{MS residual}}$$

The mean square for each of variation (column 5 of the results) is derived by dividing the sum of squares by its associated *df*. Finally, the *F* value itself equals the explained mean square divided by the residual mean square. In this case, *F* = .240 (.014/.053). The *F* value is significant at the .676. As calculated *F* value .240 in table No. 4.14 is less than the tabulated *F* value 3.00, so H_0 hypothesis of this study is not substantiated. That is, there is no significant difference in the means implies that professors and doctors view IT differently from that of IT consultants.

ANOVA

IT

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	.026	2	.014	.240	.676
Within Groups	11.146	204	.053		
Total	11.172	206			

Table 4.14 : Represents ANOVA Results for Hypothesis No.5

a. Grouping Variables: Professor, Doctors & IT consultants
b. Testing Variable: IT

Hypothesis No.6: Experience of non-IT workforce is negatively correlated with perceptions about IT.

Table 4.15 : Correlation

	HF	OF	TF	ISD	USE	PRC	PRB	STF	OPR	SFF	Average r
HF	1	0.651	0.44	0.611	0.746	0.486	0.404	0.409	0.541	0.301	0.535286
OF	0.651	1	0.758	0.746	0.834	0.732	0.349	0.455	0.632	0.647	0.646429
TF	0.44	0.758	1	0.577	0.745	0.665	0.334	0.334	0.466	0.403	0.550429
ISD	0.611	0.746	0.577	1	0.708	0.506	0.281	0.372	0.607	0.431	0.543
USE	0.746	0.834	0.745	0.708	1	0.718	0.719	0.431	0.617	0.734	0.700143
PRC	0.486	0.732	0.665	0.506	0.718	1	0.275	0.203	0.264	0.566	0.512143
PRB	0.404	0.349	0.334	0.281	0.719	0.275	1	0.263	0.348	0.271	0.375
STF	0.409	0.455	0.334	0.372	0.431	0.203	0.263	1	0.232	0.322	0.352429
OPR	0.541	0.632	0.466	0.607	0.617	0.264	0.348	0.232	1	0.305	0.524175
SFF	0.301	0.647	0.403	0.331	0.734	0.556	0.271	0.322	0.305	1	0.536238

Correlation is significant at the 0.01 level (2-tailed). (n=277)

Table 4.15 points correlations between the research variables, average correlations can be seen from last column. In the order of magnitude, the biggest weight of correlation is between the 'Satisfaction' and rest of the variables (r=0.7) and smallest correlation-score on Problems (r=0.512) and Development (r=0.535) with all the variables. However, 8 out of 10 variables are significantly correlated with r from 0.5, to 0.7.

Hypothesis No.7: Higher the perceptions about IT, greater are the chances/perceptions of success in IT projects.

On 5 point scale the relationship between higher perceptions about IT for greater chances/perception of success in IT projects was significant as tested by simple regression analysis. The first table lists the independent variable which is centered into the regression model and R (.104a) is the correlation of the independent variable with the dependent variable.

In the *Model Summery* table, The R Square (.011), which is the explained variance, is actually the square of the multiple R $(.104a)^2$. The *ANOVA* table shows that the *F* value of 4.217 is significant at the .038a. In the *df* (degree of freedom) in the same table, the first number represents the independent variable (1); the second number (277) is the total number of complete responses for all the variables in the equation (*N*), minus the number of independent variables (*K*) minus 1. (*N-K-1*) [(277-1-1) = 275]. The *F* statistic produced (*F = 4.217*) is significant at the .038a level.

To be statistically significant calculated correlation must be at least .304 on 5 point scale, it is inferred that the influence of perception about IT is significant as beta score is .513, thus H_0 hypothesis is not substantiated.

The next table titled *Coefficients* helps us to see that the independent variable influences most the variance in success of IT projects (i.e., is the most important). If we look at the column Beta under *Standardized Coefficients,* we see that the highest number in the beta for perception about IT .511 is significant at the .038a level. The results illustrate that the independent variable is significant.

This implies that perception about IT significantly influence the chances/perceptions of success in IT projects, thus the H_0 hypothesis is rejected.

Summary of Model

Model	R	R. Square	R. Square (Adjusted)	Estimation Std Error
1	.104(a)	.011	.008	.23501

a. Constant Predictors, Perception about IT, Success/Perception of IT Projects.

Table 4.16 : Represents Model Summary for Hypothesis No.7

ANOVA

Model		The sum of Squares	df	Square of Mean	F	Sig.
1	Regression	.239	1	.239	4.217	.038(a)
	Residual	21.982	275	.055		
	Total	22.220	277			

a. Constant Predictors, Perception about IT
b. Dependent Variable: Success/Perception of IT Projects

Table 4.17 : Represents ANOVA for Hypothesis No.7

Coefficients

Model		Non Standardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	3.128	.045		69.497	.000
	Perception about IT	.057	.028	.513	2.078	.038

a. Dependent Variable: Success/Perception of IT Projects

Table 4.18 : Show the Coefficients for Hypothesis No.7

Hypothesis No.8: The organizational, human, contextual and technological factors collectively determine the variation in the success/failure of an IT-project.

The multiple regressions analysis was applied according to standardized coefficient on 5 point scale for the dependence of success/failure of an IT-project on organizational, human, contextual and technology. The first table lists the four independent variables that are centered into the regression model and R (.561a) is the correlation of the four independent variables with the dependent variable, after all the intercorrelations among the four independent variables are taken into account.

In the *Model Summery* table, The R Square (.315), which is the explained variance, is actually the square of the multiple R $(.561a)^2$. The *ANOVA* table shows that the *F* value of 61.553 is significant at the .000a. In the *df* (degree of freedom) in the same table, the first number represents the number of independent variables (4); the second number (277) is the total number of complete responses for all the variables in the equation (*N*), minus the number of independent variables (*K*) minus 1. (*N-K-1*) [(277-4-1) = 272]. The *F* statistic produced (*F* = 61.553) is significant at the .000a level.

To be statistically significant calculated correlation must be at least 0.304 on 5 point scale, it is inferred that the influence of organization, human, context and technology on success of IT projects was found highly significant thus, the H_0 hypothesis is not substantiated.

The next table titled *Coefficients* helps us to see which among the three independent variables influences most the variance in success of IT projects (i.e., is the most important). If we look at the column Beta under *Standardized Coefficients,* we see that the highest number in the beta for organization .365, human .704, context .372 and for technology it is .533, which is significant at the .000a level. The results suggest the priority list for the policy makers to adopt it during the policy formulation for IT projects development and use process. It can be inferred that human play more important role than other factors i.e. organization, context and technology however, technology effects are greater than organizational and contextual factors.

Summary of Model

Model	R	R. Square	R. Square (Adjusted)	Estimation of Std Error
1	.561(a)	.315	.310	.19607

a. Constant Predictors, Organization, human, context and Technology.

Table 4.19 : Represents Model Summary for Hypothesis No.8

ANOVA

Model		The Sum of Squares	df	Square of Mean	F	Sig.
1	Regression	6.996	3	2.332	61.553	.000(a)
	Residual	15.224	396	.038		
	Total	22.220	399			

a. Constant Predictors, Organization, human, context & Technology.
b. Dependent Variable: Success of IT Projects

Table 4.20 : Result of ANOVA for Hypothesis No.8

Coefficients

Model		Non standardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std Error	Beta		
1	(Constant)	1.405	.137		10.243	.000
	Organization	.269	.043	.365	9.653	.000
	Human	.253	.029	.704	8.764	.000
	Context	.412	.054	.372	9.651	.000
	Technology	.468	.048	.533	9.782	.000

a. Dependent Variable: Success of IT Projects

Table 4.21 : Portray Coefficients for Hypothesis No.8

V. Major Findings and Discussion

Several studies have focused on the human challenges i.e. difference of perceptions about IT among the developers and users due to several gaps of education, communication, culture, motivation and satisfaction (Argyris, 1971; Kaasboll, 1997; Dann et al., 1998; Glass, 1998) while, Land et al., 1992; Ennals, 1995; Segars and Grover, 1996) studied the issues emanating from the organization and technology i.e. the nature, policies and procedures, the IT maturity, power structures etc. Likewise environment or context is significant because it influence and change altogether requirements for the success/failure of an IT project (Flowers, 1997). Similarly, Herzberg's two factors theory suggests that job-satisfiers relate to the job-contents while job-dissatisfiers emerge from the job-context (Luthans, 1995:149).

With this context, theoretical framework developed after literature review was used to get readings from the real-world situation (ISD and Use practices in KPK Pakistan). Primary data collected through questionnaire provided sufficient material about the problem-situation in the background of ideal theoretical framework extracted from the documented knowledge. The analysis and logical reasoning of the primary and secondary data provides good base for findings, following are the major findings along with discussion of this study:

The empirical results of this study points that public sector organizations in KPK Pakistan are less optimistic about the role of IT than private sector as indicated by the t value 15.097, which means that in KPK Pakistan, private sector is more optimistic about the role of IT in organizations for maximum efficiency and effective utilization of both the human and material resources of the organization that is why they are heavily investing in computerization of their organizational operations. This study further finds that public sector organizations are under-using IT potentials in comparison to private sector; the results of t statistics 14.234 support the literature. As for as Escalation in IT projects is concerned which are widely studied by researchers like Drummond (1994, 1996), again results of the study identified that escalation is severe issue of the public sector organizations than in private enterprises of KPK Pakistan according to t statistics 16.573. This implies that the ratio of time-delays, cost-overruns, compromise on lesser objectives is very high in public sector IT projects of KPK, which may leads to failure or total termination of projects, eating budget and resources of the organizations. Experts believe in application of soft methodologies and user participation in ISD (giving parallel importance to socio-technical factors) along with effective training and education of all the stakeholders involved also documented by Walsham (2000) Hirschheim and Klein (1989) Wynekoop and Russo (1995) Mumford and Weir (1979), however, this study have points that in comparison to private sector, public sector is ignoring these international signals and play down the human, social and psychological aspect in ISD, use and maintenance. The application of hard and fast rules with bureaucratic mind set (cumbersome procedures from project proposal to development, implementation and use are very common in public sector organizations. This may also result into miscommunication between the developer and user; make management of resistance to change more difficult.

The calculated *F* value .240 of this study explains the differences among professors and doctors and IT consultants who view ISD differently due their background diversities. Moreover the experience of non-IT workforce is negatively correlated with perceptions about IT that significantly affect the ISD and use process. Perceived ease of use, usefulness and experience with IT also play pivotal role in perception of users about IT projects. This study has found that IT-people overestimate while non-IT workers underestimate the role of IT in the organizations. This is verified by the t value .891 which pin point that there are gaps between IT people and Non IT workers with reference to role of IT in an organization which necessitates the education, close and intimate relations, corporation and coordination among these two groups to development more understanding of the organization and management, technical competency and skills in their respective fields and to effectively use IT as competitive weapon for the accomplishment of organizational goals and objectives through innovation, growth, cost effectiveness, alliance and mergers as higher the perceptions about IT, greater will be the chances/perceptions of success in IT projects. This is further supported by the Beta .511, which verified the arguments of Elton and Justin (1998) that higher perception about IT leads to greater success of IT projects development, use and implementation.

The nature (public/private), size, structure, objectives, and culture of the organization determine the organizational IT maturity i.e. the experience with ISD and use. The mechanism for developer-user interaction political/power struggles may help decrease the control the political maneuvering and powers struggle in IT projects development which according Sauer (1993, 1999), Markus & Bjorn-Andersen, 1987, Avgerou and Cornford (1998) and Glass (1998) is one of the major cause of IS projects failures.

The highest number in the beta of this study for organization .365 human .704, context .372 and for technology it is .533 supports the literature that organizational, human, contextual and technological factors collectively determine the variation in the success/failure of an IT-project and suggest the priority

list for the policy makers to devise strategies and policy when they are deciding about the IT projects development and use process. The beta .704 further highlight the value of that human element which play more important role than other factors i.e. organization, context and technology however, technology effects are greater than organizational and contextual factors. The common misperceptions about IT and perceptual gaps between developers and users as researcher's postulates with reference to ISD and use could be minimized through organizational motivation techniques for IT.

VI. Conclusions

The national IT policy is a very important document that set guidelines for the computerization in any country; Pakistan introduced its 1st IT policy in 1990 while Electronic Transaction Ordinance and Electronic Crimes Act were promulgated in 2002 and 2003 respectively, however according to Kundi (2009) there are several deficiencies and it is not comprehensive. Following are some suggestion for policy makers in the background of ISD and use practices in KPK Pakistan:

Promotion of IT-culture in all corners of the country among all segments of the society besides IT-education may be made compatible to the market needs, this demands revision of the old curricula and project management and evaluation techniques in IT education.

The feudal mind set of administrative machinery is also is the cause of failure of ISD and Use in KPK, so change in mind set of the administrative machinery and decision makers and effective training along with continuous updating of the information systems (eGovernment in particular) is required for effective ISD and use in KPK Pakistan. Moreover, human element play key role in success or failure of IT projects in comparison to technical factors, so developers are required not to ignore the human element rather give equal importance to socio-technical factors. Last but not the least is that administrative, socio-technical, political and cultural support is the backbone for successful development and implementation of IT project which must be ensured.

During the study it was observed that most of the IT projects were not completed within stipulated times which overburden the finances, inorder to remain economical and effective the project must completed within time and budget. The main reason of timely non completion is the political maneuvering and kickback involved in the projects besides imposing attitude and IT-organizational maturity which widens the gap between developers and users. In this connection Org-ware, people-ware, hardware and software training may be continuously provided to both developers and users, so that the common misperceptions about IT and perceptual gaps between developers and users may be minimized/ or bridged during the ISD and use for successful development and implementation.

Succinctly, one can understand that technology can be imported but not the demographic of the organization thus, non-technical issues are 'local in nature, structure and intensity,' which definitely need local studies of ISD and use practices so as to dig-out 'customized ISD and use process.

References Références Referencias

1. Argyris, C. (1971) Management information systems: The challenge to rationality and emotionality. Management Science. 17(6), 275-292.
2. Avgerou, C. and T. Cornford (1998) Developing information systems: concepts, issues and practice. 2nd ed. Macmillan Press Ltd.
3. Avison, DE. and AT. Wood-Harper (1990) MultiView: An exploration in information system development. Oxford. U. K. Blackwell Scientific Publications.
4. Avison, DE. and G. Fitzgerald (1995) Information system development: Methodologies, techniques, and tools. 2nd ed. McGraw-Hill Book Co.
5. Avison, DE. and H. Shah (1997) The information systems development life cycle: A first course in information systems. The McGraw-Hill Companies.
6. Babbie, E. (1993) the practice of social research. 7th ed. Wordsworth Publishing Co.
7. Baskerville, R. and S Smithson (1995) IT and new organizational forms: Choosing Chaos over panacea. European Journal of Information Systems. Vol.4, 66-73.
8. Beynon-Davies, P. (1995) Information systems 'failure': The case of London Ambulance Service's Computer Aided Dispatch project. European Journal of Information Systems. Vol. 4, 171-184.
9. Beynon-Davies, P. and M. Lloyd-Williams (1999) when health information systems fail. Health Informatics Journal. 19(4), 66-79.
10. Brooke, C. (1995) Analyst and Programmer Stereotypes: a Self-fulfilling prophecy? Journal of Information Technology. Vol. 10, 15-25.
11. Burn, JM. (1996) IS strategies and management of organizational change: A strategic alignment model. International Journal of Information Management. Vol. 8, 205-216.
12. Caudle, SL et al., (1991) Key information systems management issues for the public sector. MIS Quarterly/June. 171-188.
13. Collins, T. and D. Bicknell (1997) CRASH: Ten easy ways to avoid a computer disaster. Simon & Schuster A Viacom Company. UK.
14. Dann, J., A. Broome, and W. Joyce (1998) Human Barriers to Project Success the Computer Bulletin. May. 10-17.

15. DeMarco, T. (1979) Structured analysis and system specification. London. Englewood Cliffs, N.J.
16. Drummond, H. (1996) the politics of risk: trials and tribulations of the Taurus project. Journal of Information Technology. Vol. 11, 347-357.
17. Elton, J. and J. Roe (1998) Bringing discipline to project management. Harvard Business Review. March-April. 153-159.
18. Elton, J. and Justin, R. (1998) Bringing Discipline to Project management. Harvard Business Review, [Online] accessed from http://hbr.org/1998/03/bringing-discipline-to-project-management/ar/1
19. Ennals, R. (1995) Executive guide to preventing information technology disasters. Springer-Verlag London Ltd.
20. Ennals, R. (1995) Executive guide to preventing information technology disasters. Springer-Verlag London Ltd.
21. ETO (2002) Electronic Transaction Ordinance. Amendment of Articles 85, P.O No. 10 of 1984. Law Affairs Division, Ministry of Law and Legal Affairs, Government of Pakistan, Islamabad. 1-25.
22. Ewusi-Mensah, K. and ZH. Przasnyski (1991) On information systems project abandonment: An exploratory study of organizational practices. MIS Quarterly. March. 67-83.
23. Ewusi-Mensah, K. and ZH. Przasnyski (1991) on information systems project abandonment: An exploratory study of organizational practices. MIS Quarterly. March. 67-83.
24. Ewusi-Mensah, K. and ZH. Przasnyski (1994) Factors contributing to the abandonment of information System development Projects. Journal of Information Technology. Vol. 9, 185-201.
25. Ewusi-Mensah, K. and ZH. Przasnyski (1994) Factors contributing to the abandonment of information System development Projects. Journal of Information Technology. Vol. 9, 185-201.
26. Ewusi-Mensah, K. and ZH. Przasnyski (1995) Learning from abandoned Information Systems Development Projects. Journal of Information Technology. Vol. 5, 3-14.
27. Ewusi-Mensah, K. and ZH. Przasnyski (1995) Learning from abandoned Information Systems Development Projects. Journal of Information Technology. Vol. 5, 3-14.
28. Fitzgerald, B. (1996) Formalized system development methodologies: A critical perspective. Information Systems Journal. Vol. 6, 3-23.
29. Fitzgerald, B. (1996) Formalized system development methodologies: A critical perspective. Information Systems Journal. Vol. 6, 3-23.
30. Flowers, S. (1997) toward predicting information systems failure. DE. Avison (ed.) Key issues in information systems. Proceedings of the 2nd UKAIS Conference on University of Southampton. 2-4 April.
31. Galliers, RD. (1992) Information systems research, issues, methods and practical guidelines. Alfred Walker Ltd. Information System Series.
32. Glass, RL. (1998) Software Runaways: Lessons learned from massive software project failures. Prentice Hall and Yourdon Press.
33. Hirschheim, R., and HK. Klein (1989) four paradigms of information systems development. Communications of the ACM (32:10), 1989, pp. 1199-1215.
34. Kaasboll, JJ. (1997) How evolution of information systems may fail: many improvements adding up to negative effects: European Journal of Information Systems. Vol. 6, 172-180.
35. Koo, A. C. (2008). Factors affecting teachers' perceived readiness for online collaborative learning: A case study in Malaysia. Journal of Educational Technology & Society, 11 (1), 266-278. Retrieved November 10, 2008, from http://www.ask4research.info/
36. Land, FF., PN Le Quesne and I. Wijegunaratne, (1992) Technology transfer: Organizational factors affecting implementation, some preliminary findings. Cotterman, WW. and JA Senn (eds.) Challenges and strategies for research in system development. 65-81.
37. Markus, M. L. and Bjorn, A. (1987) Power over users: Its exercise by system professionals. Communications of the ACM. 27(12), 1218-1226.
38. Markus, ML. (1981) Implementation politics: Top management support and user involvement. Systems, Objectives, Solutions. Vol. 1. 203-215.
39. Markus, ML. (1983) Power, politics, and MIS implementation. Communications of the ACM. 26(6), 430-444.
40. McGrath, GM. (1997) an Implementation of Data-Centered Information Systems Strategy: A Power/Political Perspective. Failure and Lessons Learned in Information Technology Management. Vol. 1, 3-17.