

**INFORMATION SYSTEMS PROJECTS IN KENYA: A STUDY OF
USER INVOLVEMENT**

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BY

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**A RESEARCH PROJECT SUBMITTED IN PARTIAL FULFILMENT FOR THE
DEGREE OF MASTER OF BUSINESS ADMINISTRATION**

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DECLARATION

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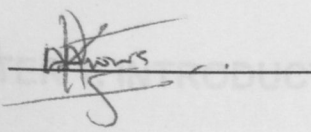
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This research project is my original work and has not been presented for a degree in any other University. VI

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Mr. Joel K. Lelei

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Wilson Kigwa

ABSTRACT

This research explores the level of user involvement and the importance of user involvement in ICT systems development. It also seeks to identify the challenges, which are faced as users are involved. This was occasioned by the dilemma posed in the literature on the importance of user involvement and the extent to which it is practiced in ICT systems development.

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Wilson Kigwa

ABSTRACT

This research explores the level of user involvement and the importance attached to it by ICT consultants, it also seeks to identify the challenges, which are faced as users are involved. This was occasioned by the dilemma posed in the literature as to the importance of involvement and the extent to which to involve users in systems development.

The objectives of the study were to establish the importance that ICT Consultants attach to users' involvement, to determine the extent to which ICT Consultants involve users and the challenges of user involvement faced by ICT Consultants in Information systems projects in Kenya. The report includes a description of the research methodology employed, which was mainly descriptive, and the data analysis techniques, which were tabulation and factor analysis.

The data was collected from 41 ICT consultants who represented 68.33% of the target population. On performing data analysis it was found that the respondents were aged between 20 and 35, with almost 39% and that experience levels are not quite high in ICT consultancy in Kenya.

It was found that ICT consultants involve users at all stages of systems development. Even then, there is variation in terms of users involvement. Stages such as design, programming and coding there is minimal involvement, while stages such as Investigations, conceptualization, implementation, requirements analysis and performance evaluation users are highly involved. This is in line with the expectation and the importance they attach to the exercise.

The analysis resulted in extraction of six (6) factors were extracted as the main challenges. These factors revolves around the quality of IT staff employed by organization, internal organizations constraints and priorities, fears of users and

their resistance to embrace change, company politics, and cost implications on the new system to the organization.

INTRODUCTION

The study reveals that user involvement as an important ingredient for success implementation of Information systems needs support and has been taken into consideration by ICT consultants in Kenya. But there are challenges in achieving these important aspect of IS which are mainly organization related. It is recommend that management should be sensitized by all means to win their support and that ICT consultants should ensure all stakeholders are involved in IS projects as much as possible.

The conclusions reached are that a relationship exists between the extent to which users are involved during development of their computer system and the perceived importance the ICT consultants attach to users involvement. Thus confirming existence of policies governing systems development life cycle among the ICT consultants in Kenya as expected.

Common sense, intuition, and discrete logic dictate that engaging end-users in the analysis and design of information systems is a responsible and useful practice (Wahham 1993). On the other hand, this relatively recent observation requires changing the traditional perspectives held by users, designers, developers, and management. From the early 1950s to the late 1970s, the majority of information technology (IT) departments employed a top-down "waterfall" approach to systems development, formally known as the systems development life cycle (SDLC) (Checkland, 1981). It was not until the 1980s did

CHAPTER 1:

INTRODUCTION

1.1 Background

Literature is replete with research studies on involving users in information systems development process. Among the findings are that a large number of computerized systems do not achieve the desired results and are consequently deemed as failures by the organizations themselves. These are termed 'correspondence failures' (Lyytinen and Hirschheim, 1987). They reported 50% of all IS as failures; Sauer (1993) gives a similar figure; Höchststrasser and Griffith (1991) put the figure as high as 70%, as do Willcocks and Lester (1993).

Research into computer system failures found that some failures were attributable to technical defects, or budgetary problems (Brooks, 1975; Buechi, 1982). However, a large proportion of the failures were the consequence of failing to consider the users needs when systems were being analyzed, designed, developed or implemented, thereby resulting in an inability to meet the expectations of the group for which the system was intended (Lucas, 1975; Lyytinen and Hirschheim, 1987).

Common sense, intuition, and discrete logic dictate that engaging end-users in the analysis and design of information systems is a responsible and useful practice (Walsham 1993). On the other hand, this relatively recent observation requires changing the traditional perspectives held by users, designers, developers, and management. From the early 1950s to the late 1970s, the majority of information technology (IT) departments employed a top-down "waterfall" approach to systems development, formally known as the systems development life cycle (SDLC) (Checkland, 1981). It was not until the 1980s did

systems thinkers pursue more participatory development methodologies. With growing popularity, the participatory model has spawned new careers in commerce, education, and research, especially in the fields of usability engineering and human-computer interaction (Briolat and Pogman 2000). The engagement of users in the system development process is an important topic and the focus of many changes occurring within traditional IT departments.

and implemented within the systems development life cycle (SDLC).

The term "user" has been viewed differently. Land and Hirschheim (1983) acknowledge the existence of different types of users: senior management who bear ultimate responsibility for the organization's well-being and who may use outputs of Information Systems developments; middle management who are responsible for the operational staff using the IS; and finally those staff who regularly interact with the system. From project conception, through the development lifecycle each of these users may contribute or participate in IS development activities. The term "user" is not generally defined specifically in the many studies published in literature, beyond the Ives and Olson (1984) definition of users as "representatives of the target user group".

acceptance of a system by its target market is to involve potential users in the

User involvement has traditionally been referred to as participation in the system development process measured as a set of activities that users or their representatives have performed (Baroudi, Olson, and Ives, 1986; Doll and Torkzadeh, 1989; Ives and Olsen, 1984). Barki and Hartwick (1994) proposed a clearer definition for user involvement, distinguishing it from user participation as in other disciplines. They define user participation as the assignments, activities and behaviors that users or their representatives perform during the systems development process. User involvement refers to the subjective psychological state reflecting the importance and personal relevance that a user attaches to a given system. These definitions appear to have been generally accepted in the ensuing literature (Hunton and Beeler, 1997; McKeen and Guimaraes, 1997). It is expected that user involvement should be integrated into Information System development process.

Information systems users roles in systems development could include that of listeners, observers, reviewers, advisers, originators, decision makers or experts. The roles depend on the end-user position and the stage of Information systems development life cycle. Information systems development is a cyclical process consisting of five stages namely Analysis, Design, Development, Implementation, and Maintenance (Hackos, 1998). Users requirements, can well be considered and implemented within the systems development life cycle (SDLC).

Systems development is often a balancing act between stakeholders, which may include executive personnel, project managers, computer programmers, usability and interface designers, graphic artists, subject matter experts, and end-users (O'Brien, 2002). Each of these stakeholders pursues their own goals and objectives, and also brings their own attitudes, interests, and opinions to the development process. Keeping focused on the end-user and the tasks that they must perform is difficult, yet the entire purpose for developing the system must be achieved (Briolat and Pogman 2000). Even then, end-users must be involved since as Laudon, (2000) puts it that one of the best ways to ensure the acceptance of a system by its target market is to involve potential users in the design and development of the system. This leads to fostering goodwill among end-users, and enables developers to educate themselves regarding the needs, wants, and desires of end-users.

Evidently, involvement of users in information systems development, whether it is to design new systems or to modify existing ones, is held to be one of the most important factors influencing implementation success or failure. Research in respect of user involvement in success of Business Information systems implementation will therefore be useful to the organizations.

1.2 Statement of the problem

User involvement has always been considered an important contributor to the success of information systems, despite inconclusive evidences to support such claims. Mason and Mitroff (1981) stated that successful IS development and subsequent implementation is only possible through taking account of the viewpoints of as many stakeholders as possible. Bell and Wood-Harper (1998), and Flynn (1998) advocate that users participation (involvement) during the development process is necessary if a positive attitude towards the computer Information system is to follow. Several authors such as Bjorn-Anderson (1980), Mumford (1983), and Davis and Olson (1984) supports this statement and conclude that greater participation/involvement does increase system usage and satisfaction.

However, there are studies that conclude that the benefits of user involvement have not been strongly demonstrated. For instance Olson and Ives (1984), considers alternative approaches to user involvement, also they indeed determined that only 8 of 22 studies claim to demonstrate a positive relationship between user involvement and system success. Baker, Murphy and Fisher (1988a) cast doubt on the expectations of participation. They showed how participation, might adversely affect project success. They pointed that user involvement causes project delays, creates conflicts and diminishes project success. Robson (1995) apparently, supports this view by pointing out that problem-solving groups can run into problems, which can affect their work.

In view of the position held by the authors, it is evident that, user involvement in a project may not guarantee project success. No doubt authors like Baker, Murphy and Fisher (1988a) suggest that there is no need to involve all users but rather only experts' views should be considered. On the contrary others like Huxam (1991), pointed out that though users have diverse needs that could even be inconsistent with each other, they still have to be taken care of in a project.

Huxam hence, recommends involvement of all users of the Information system and as much as possible.

The various interest groups that might find this study useful include:

The two views pose a dilemma as to the importance of involvement and the extent to which to involve. Hence the questions arise as to what importance should be attached to user involvement and to what extent should users be involved during systems development? Further, it is evident that the dilemma arises out of challenges of users involvement, which vary with situations. Thus a question arises as to what are the challenges of user involvement in the system development process?

As no research has been done in Kenya addressing the questions, they are addressed in this research study. The objectives of the study relate to the questions in respect to the Kenyan environment and are presented in the next section.

1.3 Objectives of the study

1. To establish the importance that ICT Consultants attach to user involvement in Information systems projects in Kenya.
2. To determine the extent to which ICT Consultants involve users in Information systems projects in Kenya
3. To determine the challenges of user involvement faced by ICT Consultants in Information systems projects in Kenya

1.4 Importance of the study

The various interest groups that might find this study useful include:

1. The academics in further research in the area in order to establish the real practice in the industry and compare with what is expected,
2. The computer society of Kenya could find the results valuable in developing guidelines for systems development, which could enhance user participation in systems development, hence reduce systems failure and redundancy.
3. Organizations intending to implement new systems would make informed decisions with respect to users involvement. Thus ensuring that Business information systems implemented are successful and not failure.
4. That the Information and communications Technology (ICT) Consultants and systems developers could use the findings in developing approaches for effective involvement.

Kaplan (1995) divides user involvement in two types: user process involvement and user system involvement. User process involvement refers to the psychological identification of users with the process of IS development (i.e. their subjective attitude toward the IS development task). User system involvement refers to the psychological identification of users with respect to the IS itself (i.e. their subjective attitude toward the product of development). Whatever the type, user involvement does not mean that users are truly involved as equal participants, or co-agents, in those processes. Kaplan and McLean (1992) argue that it is not so much user participation, as user involvement, which leads to information system success but the state of psychological identification with some object, such that the object is both important and personally relevant.

CHAPTER 2: Factors For users Involvement

LITERATURE REVIEW

2.1 Introduction

Involvement of system users is seen as a critical success factor in information systems development (Ives and Olsen, 1984; Barki and Hartwick, 1994). According to Kappelman and McLean (1991) users involvement is something distinct from, although associated with, user participation. In addition they pointed out the psychological state of user involvement may be more important than user participation in understanding IS success. Whatever the case, user involvement is necessary for IS success given that it is primarily the organizational issues that lead to computer system failures (Doherty and King 1997). Hence, to reduce the chances of IS failure, organizations must adequately address the non-technical, organizational and stakeholder issues surrounding systems development and implementation. These issues can only be identified through users involvement at all stages of IS development.

User involvement in IS project leads to commitment to the project. Firstly, they Kappelman (1995) divides user involvement in two types: user process involvement and user system involvement. User process involvement refers to the psychological identification of users with the process of IS development (i.e. their subjective attitude toward the IS development task). User system involvement refers to the psychological identification of users with respect to the IS itself (i.e. their subjective attitude toward the product of development). Whatever the type, user involvement does not mean that users are truly involved as equal participants, or co-agents, in those processes. Kappelman and McLean (1992) argue that it is not so much user participation, as user involvement, which leads to Information System success but the state of psychological identification with some object, such that the object is both important and personally relevant.

2.1.1.1 Reasons For users Involvement

Users participation objective generally include eliciting stakeholder commitment and contribution (Laudon and Laudon, 2001; Thierauf and Klekamp, 1975; Pinto and Slevin, 1988a; Robson, 1995). Achievement of these objectives should be expected to result in project success. User contribution in IS leads to better IS. According to Briolat and Pogman (2000), "user participation is advocated in order to discover users' needs and points of view, validate specifications, and hence build better IS for the organization". Participation reflects what specific behaviors are performed, how many of these behaviors are performed, and how often they are performed (Barki and Hartwick, 2001). Ives and Olson (1984) outlined how user involvement can improve system quality by: providing a more complete assessment of user information requirements, providing expertise about the organization the system is to support, avoiding development of unacceptable or unimportant features, and improving user understanding of the system. This is because users would have more opportunities to mold the system according to their priorities and business requirements and more opportunities to control the outcome.

User involvement in IS project leads to commitment to the project. Firstly, they are more likely to react positively to the system because they have been active participants in the change process itself (Lucas, 1975). Secondly user involvement is also expected to increase user satisfaction and acceptance by developing realistic expectations about system capabilities, providing an arena for bargaining and conflict resolution about design issues, decreasing user resistance to change leading to system ownership by users, and committing users to the system (Ives and Olson, 1984). Doll and Torkzadeh (1988) reported that end user satisfaction levels are significantly correlated with their involvement in the design of the system. Similarly, increased job satisfaction and systems usage are reported as being positively related to involvement in the development process by Lucas (1975).

Despite all the expected positive results of user participation, it must be considered with caution. Walsham (1993) warns against the naïve view that user involvement in the design process is a panacea for development and success. Similarly, Ives and Olson (1984) stated that the case for user involvement has not been strongly demonstrated. There is a need to consider participation in terms of the Systems development life cycle constituents.

2.2 Systems Development Life Cycle

The Systems development life cycle (SDLC) is a traditional method for building systems that are still being used today, especially in medium and large complex systems projects. It divides the systems development process into formal stages that must be completed sequentially with clearly defined tasks for both the end-users and information systems specialists.

There is increasing need to involve the users in the systems development life cycle. Designing for system quality requires extracting detailed knowledge of the users (Laudon, 2000). According to studies conducted, user involvement is one of the three major reasons to succeed, beside executive management support and a clear statement of requirements (O'Brien, 2002). It is argued that an effective requirements definition requires involvement and mutual control of the process by all players, and a good partnership between users and designers enables a high quality of the resulting system but it also ensures that users are able to incorporate the new system into their everyday work environment (Eason, 1982).

2.2.1 Analysis stage

The analysis phase is also called data gathering phase and the problem; deficiency or new requirements are studied in detail. In this stage, system analysts, consultants, and developers typically collect data about users and their tasks and then complete a functional specification document based on usage scenarios. At the end of this phase a requirements statement is developed which provides details of what the system should do.

Even when there is a high degree of user involvement at early stages of the In fact, requirements definition is about people communicating effectively with one another. One of the most important aspects of such processes is to achieve a shared understanding of the work problems and the possible impact of technical solutions on the users' work. The lack of user input contributes to incomplete requirements and specifications, because only the system users collectively have the necessary understanding of the needs to be fulfilled (Laudon, 2000). It is recognized that users are experts in their work and a thorough understanding of requirements is achieved only by promoting effective communication with them during the requirement definition process (Lucas, 1975), by establishing user-developer links as techniques and/or channels that allow users and developers to exchange information (Clavadetster, 1981).

However, well-known problems of communication occur due to the diversity of professional expertise and organizational roles that confer users' different views and expectations of the system to be developed. The users will always play the roles of problem owners, customers and actors (Checkland, 1981), and identifying whether they formulate the right problem.

technical and function specifications are implemented by the programming team.

The involvement of system users is seen as a critical success factor in information systems development phase (Ives and Olson, 1984; Barki and Hartwick, 1994). This leads to the development of a prototype (a pseudo-

2.2.2 Design Stage

Design phase in the SDLC helps to come-up with the formal requirements statement for the system, and a rough sketch of what the user interface will be like. Although the system design team engages users, the opportunity to affect change is held solely by the design team. In the design stage, the design team produces a technical specification document.

Even when there is a high degree of user involvement at early stages of the system development lifecycle (SDLC), for example when defining system requirements, users' influence on the system outcome can be subverted through decisions taken at a later stage. Eason (1982) describes a window of opportunity at the design stages of development: because there is a time-lag between the point when IS professionals appreciate the implications of technical alternatives for the target system, and the point when users reach this understanding, the contribution of users to decision-making is limited to that period of time when many initial technical decisions have been made and the design is gradually being frozen. If users are denied access to decision-making during this window (the design and modeling stages of the SDLC) then they cannot exert a significant influence upon the form of the system outcome.

2.2.3 Development Stage

In the development phase, examination and re-examination of the requirements statement is done to ensure that it is followed to the letter. In this stage, the technical and function specifications are implemented by the programming team.

The involvement of system users is seen as a critical success factor in information systems development phase (Ives and Olsen, 1984; Barki and Hartwick, 1994). This leads to the development of a prototype (a pseudo-

complete system) and production of a ready system, which is used as a demo to the end-user.

2.2.4 Implementation Stage

In the Implementation phase, the system reaches fruition and it is deployed for user by end-users, who are trained during the phase. Once developed, components of the system are implemented, tested, evaluated, and refined. Lastly, the product is deployed to end-users and maintained, (Hackos 1998).

An important aspect related with user involvement is '*user perceived control*'. Baronas and Louis (1988) stated "by involving end-users in decisions relating to implementation, workers may become more interested in the success of the implementation and more satisfied with the system through the social-psychological mechanism of perceived control". Personal control has been defined in terms of choice, predictability, responsibility and ability to reduce or get relief from an unpleasant condition.

It has been suggested that systems implementation is likely to be experienced by non-technical users as a period of transition during which users make sense of, and cope with, various differences between old and new systems and their anticipations of these difference and that is likely to represent a threat to user's perceptions of control over work.

Traditionally, the assumption in terms of user involvement is that if the organizational structure of an IS project is in place and appropriate committee meetings attended, their integration and coordination will occur. However, as Amoako and White (1997) state "unlike the technical side of project management, these activities are very loosely defined, and very often include no

mechanisms for the integration that will achieve the desired results". Therefore, there is the need for the distinction between structural integration and effective management of the involvement process. Characteristics such as user expertise, degree of organizational decentralization, project complexity, users' previous experience with IS could determine the degree of their involvement during implementation.

2.3 Benefits of User Involvement

User involvement is expected to increase user satisfaction and acceptance (Ives and Olson 1984). This would lead to a successful Information System being implemented. Hence, concluded that user involvement will improve systems quality and user acceptance. Thus providing firstly more accurate and complete assessment of user requirements and secondly the expertise and knowledge about the organization the system is to support (Lucas, 1975). Thirdly, avoid unacceptable or unimportant features in the system (Robey and Farrow, 1982). Forth, improves users' understanding of the system (Lucas, 1975, Robey and Farrow, 1982). Fifth helps users develop realistic expectations (Gibson, 1977). Sixth, users have the opportunities to bargain and resolve conflicts about system design (Keen, 1981). And to finally develop system ownership for users (Robey and Farrow, 1982) thus decreases users' resistance to change (Lucas, 1975).

Time and cost limitations, and also marketing and sales issues take priority over Mckeen and Guimarães (1994) showed that user participation has a positive relationship with user satisfaction. They also argued that four factors affect this relationship: task complexity, system complexity, user influence and user-developer communication. Barki and Hartwick (2001) define four dimensions of user participation: responsibility, user-IS relationship, hands-on-activity, and communication activity. Based upon a meta-analysis study. Pettingell (1988) concluded that the inclusion of users in definition and design stages is the best way to increase their perception of the value of the system.

2.4 Challenges of user Involvement

User involvement can be problematic while information systems professionals perceive users as unable to make up their minds and an unnecessary complication to the 'real' processes of design (Oliver and Langford, 1987). Markus and Bjorn-Andersen (1987) observes that the greatest challenge to true user involvement influence in information systems development is constrained by IS professionals, who may exert technical power (through the possession of technical expertise), conceptual power (by shaping users' concepts of what IT can provide), symbolic power (by shaping user expectations of how IT should be used) and structural power (by developing IT policies and procedures which constrain user choices).

Research into computer system failures has also discovered that whilst some were attributable to technical defects, or budgetary problems (Brooks, 1975; Buechi, 1982) a large proportion of these were the consequence of failing to consider the users' social arena within which systems were implemented, resulting in an inability to meet the expectations of the user group for which the system was intended (Lucas, 1975; Lyytinen and Hirschheim, 1987); more recent studies indicate that the situation is not improving (Sauer, 1993; Doherty and King, 1997).

Time and cost limitations, and also marketing and sales issues take priority over system requirements (Curtis et. al., 1988). Other challenges may be and not limited to Development, resource and implementation costs, Ignorance of the needs by users, "Play down" on the users' needs impact on the final system and presence of inflexible information systems.

CHAPTER 3:

RESEARCH METHODOLOGY

3.1 Introduction

The research project sought to establish the extent of user involvement in Kenya and the importance that ICT consultants attach to it. It also sought to establish the challenges faced by these consultants as they involve or not involve users. Thus the researcher chose to conduct a survey and analyze whether ICT Consultants and developers involve users at various stages of the systems 'life cycle' and establish the current position in Kenya.

3.2 Population of study

The population of interest in the study consisted of respondents from Information and Communications Technology (ICT) consulting firms in Nairobi. The respondents in this study were the Kenya's ICT consultants. The rationale for considering these firms in this study was that they are usually involved and relied on by organizations wishing to computerize or develop a Business IS system, which help to meet the organization's business goals. Besides, they are the ones to determine who to involve and how to develop the system, and they are the ones that face the challenges of Information System Development. Thus they were expected to offer the information being sought for the study.

The researcher employed Judgmental sampling to determine the most appropriate consultant for the study. The 100 ICT consultants listed in the Business Directory 2004 were used as a guide; also Wachira (2001) listed some 77 firms for his study (see Appendix III). In addition snowball method was used to identify firms, which may not necessarily be in the above-mentioned sources for inclusion in the study.

Section A covers the demographic information for both the firm and the ICT consultants in Nairobi were selected for the study because of the time and cost limitation, and also given that most active ICT consultants firms are based in Nairobi. Also the Headquarters of these firms are in Nairobi. Further it is in Nairobi where policy guidelines are set on the company's practice. The selected firms were thus considered to be a good representation of most consultants.

3.3 Sampling Plan / Sample size

The study involved all the ICT firms concentrated in Nairobi. Hence, a census was conducted.

Though the population targeted was sixty (60) firms only fifty (50) firms responded which represent 83.33 % of the initial population. Nine (9) i.e. 15 % of the questionnaires were not complete and hence rejected as they could not be used for data analysis. Forty-one (41) questionnaires were correctly filled and hence accepted for use in the data analysis. This represented 68.33% of the target population, which is acceptable for data analysis.

3.4 Data Collection

The study used primary data. The data required to perform the study was gathered from the ICT consultants through the administration of a self-completion questionnaire. The questionnaires were largely administered on the "drop and pick later" method, this was to the managing consultant / the head of the ICT consultancy department. The data was collected from these managers as they were expected to have the knowledge and the information being sought.

The questionnaire attached at the Appendix II has five (5) sections that were used in tapping information to meet the objectives of the study: -

Section A covers the demographic information for both the firm and the consultants and was used to help in classifying the data collected for analysis. This was used to provide different perspectives thus help to enrich the study. and the respondents knew what was expected of them. Then the collected data was Section B was used to collect data on the importance that ICT consultants attach to users' involvement in systems development life cycle. By the demographic data were categorized into intervals to avoid dealing with extreme values. It was at Section C collected data on the extent and Section D on the expected practice (theory) of users involvement in the SDLC.

Section E concerned data on the challenges, which the ICT consultants faced as they involve users in SDLC. Factor analysis was used to find latent variables or factors among observed variables. Factor analysis would help group variables with similar characteristics together. With factor analysis the researcher was able to produce a small number of factors from a large number of variables that were capable of explaining the observed variance in the larger number of variables

3.5 Data Analysis

This being an exploratory study the data analysis involved summarization of data using statistical averages, percentages and frequency. The use of statistical packages SPSS was employed to ease the work of generation and format of the outputs. The results were presented using tables, Charts and graphs. This was done for all the objectives and sections of questionnaires. Further data analysis was done considering the demographic factors to provide different perspectives on the results. Factor analysis was performed for the challenges to help identify the key ones.

3.6 Data Validation

The researcher ensured that at the drop off point the documents were intact and the respondents knew what was expected of them. Then the collected data was coded, collated and edited for obvious errors and mistakes and confirmation was sought in some of the cases. Some variables especially the demographic data were categorized into intervals to avoid dealing with extreme values. It was at this stage that nine (9) questionnaires were identified faulty and rejected.

60 firms responded which represent 83.33 % of the initial population. Nine (9) i.e. 15 % of the questionnaires were not complete and hence rejected as they could not be used for data analysis. Forty-one (41) questionnaires were correctly filled and hence accepted for use in the data analysis. This represented 68.33% of the target population, as (Boyd et al, 1986) noted that any sample size of $n > 30$ (or $n = 30$) are considered large enough for data analysis purposes, hence, acceptable for data analysis.

Table 4.1.1 shows the response rate of the ICT Consultants to the questionnaires.

Table 4.1.1 Response Rate

	Dispatched	Received back	Correctly filled	Faulty ones/ Rejected
Number of questionnaires	60	50	41	9
% of the original	100%	83.33%	68.33%	15%

Given the results of the response rate the researcher based the study on the 41 ICT consultants whose survey data were accepted, which represents a 68.33% of the target population.

CHAPTER 4: Demographic Characteristics

DATA ANALYSIS AND FINDINGS

4.1 Introduction

The data was collected using questionnaires of which sixty (60) were dispatched. Though the population targeted was sixty (60) firms only fifty (50) firms responded which represent 83.33 % of the initial population. Nine (9) i.e. 15 % of the questionnaires were not complete and hence rejected as they could not be used for data analysis. Forty-one (41) questionnaires were correctly filled and hence accepted for use in the data analysis. This represented 68.33% of the target population, as (Boyd et al, 1988) noted that any sample size of $n > 30$ (or $n = 30$) are considered large enough for data analysis purposes, hence, acceptable for data analysis.

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% of the original	100%	83.33%	68.33%	15%

Given the results of the response rate the researcher based the study on the 41 ICT consultants whose survey data were accepted. Which represents a 68.33% of the target population.

4.2 Demographic Characteristics

From Table 4.2.1 it can be noted that a large number of ICT companies are jointly owned between the local and the foreign 18 (43.9%). This has no impact on the study, as ownership is not a basis of analysis but rather for the profile of the respondents back ground.

Form of ownership			
Form of ownership		Frequency	Percent
	Locally owned	9	22.0
	Foreign owned	14	34.1
	Both(Local and Foreign owned)	18	43.9
	Total	41	100.0

Table 4.2.1 Organizational Demographic Factors

Figure 4.2.1 can be noted that the business type indicates that the largest share of consultancy is dominated by IS services and software development. This is relevant for the study as the main target was the ICT consultants in IS projects in Kenya. Thus considered representative and valid for the study.

anya. Thus considered representative and valid for the study.		9.8	
76-100	1	2.4	
101-125	1	2.4	
126-200	1	2.4	
>201	5	12.2	
Total	40	97.8	
Missing	System	1	2.4
Total		41	100.0

Table 4.2.2 indicates the number of employees from the firms of the respondents. The data was classified into intervals of 25 each in order to avoid

Figure 4.2.1 Business Type

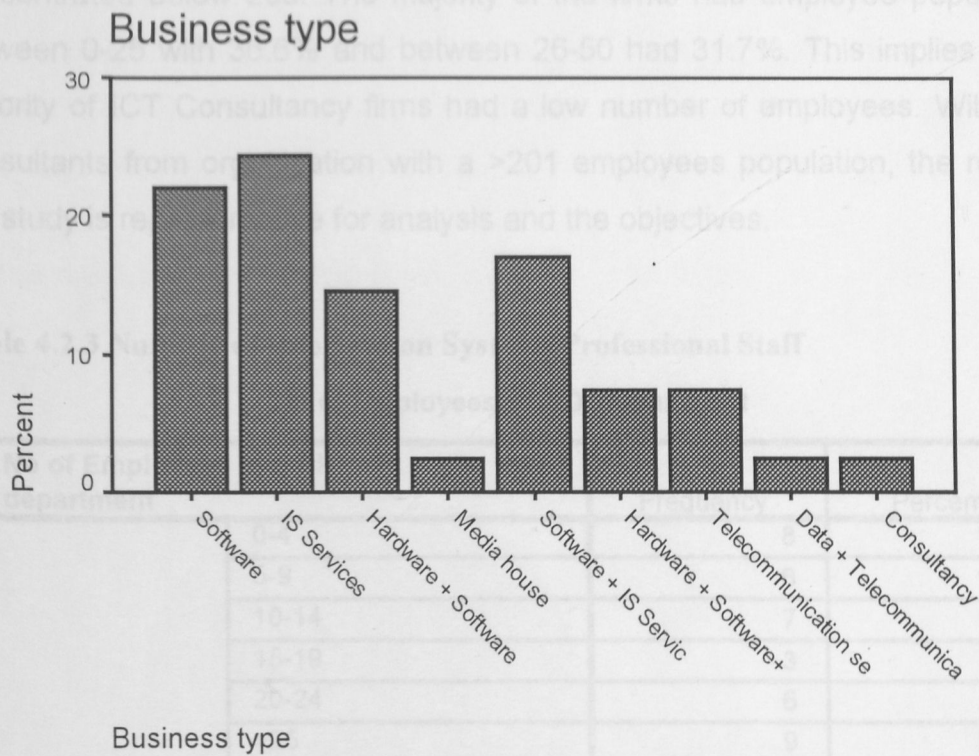


Table 4.2.2 Number of Employees in ICT consultancy Firms

No of employees			
No of employees		Frequency	Percent
	0-25	15	36.6
	26-50	13	31.7
	51-75	4	9.8
	76-100	1	2.4
	101-125	1	2.4
	176-200	1	2.4
	>201	5	12.2
	Total	40	97.6
Missing	System	1	2.4
Total		41	100.0

Table 4.2.2 indicates the number of employees from the firms of the respondents. The data was classified into intervals of 25 each in order to avoid

dealing with the extreme values, as most of the employee population was concentrated below 200. The majority of the firms had employee population of between 0-25 with 36.6% and between 26-50 had 31.7%. This implies that the majority of ICT Consultancy firms had a low number of employees. With only 5 consultants from organization with a >201 employees population, the results of the study is representative for analysis and the objectives.

Figure 4.3.1 Gender Distribution

Table 4.2.3 Number of Information Systems Professional Staff

No of Employees in ISDI department		Frequency	Percent
	0-4	8	19.5
	5-9	6	14.6
	10-14	7	17.1
	15-19	3	7.3
	20-24	6	14.6
	>25	9	22.0
	Total	39	95.1
Missing	System	2	4.9
Total		41	100.0

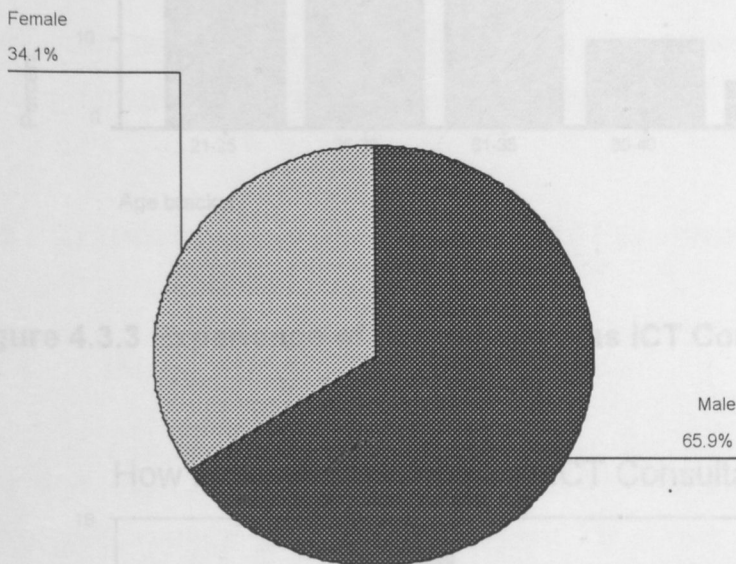
Table 4.2.3 shows the number of Information Systems Professional Staff employed in the ICT firms from which the respondents were drawn. They were classified to avoid extreme values and ease in analysis. This shows that even in large and old organizations only few ICT staff are employed, hence the study population is representative of the Kenyan scene in IS projects development.

4.3 Description of Individual Respondents

At the personal response level, 27 (65.9%) of the respondents were male, and 14 (34.1%) were female. This is represented graphically in pie chart in Figure 4.3.1. The reported figure is almost exactly the same as Igbaria and Toraskar (1994) where they reported male and female response rate of 68% and 32% respectively.

The reason for the substantial percentage difference of respondents' gender is due to the male dominance of ICT managerial and executive positions generally found throughout organizations in Kenya, this is well representative, Igbaria and Toraskar (1994) and it is in keeping with other countries, though gender does not have any implication in the study.

Figure 4.3.1 Gender Distribution



The age of respondents is represented graphically on Figure 4.3.2 - which is positively skewed. This is perhaps not surprising, given the nature of computing and its image as a 'young profession'. Indeed, whilst no respondents are less than 20 years old, the vast majority of respondents are aged between 20 and 35, with almost 39% (16) of the 41 respondents being aged between 26 and 30. Of the 41 respondents only 2 are over 41 years of age, and only 1 is over 60 years of age. The age distribution indicates the wealth of knowledge as most of the young professionals are normally well grounded in theory as they have 'just' left college. Thus the results of the study can be relied as age has implication on the theoretical results being sought in section D of the research instrument.

Figure 4.3.2 Age Distribution

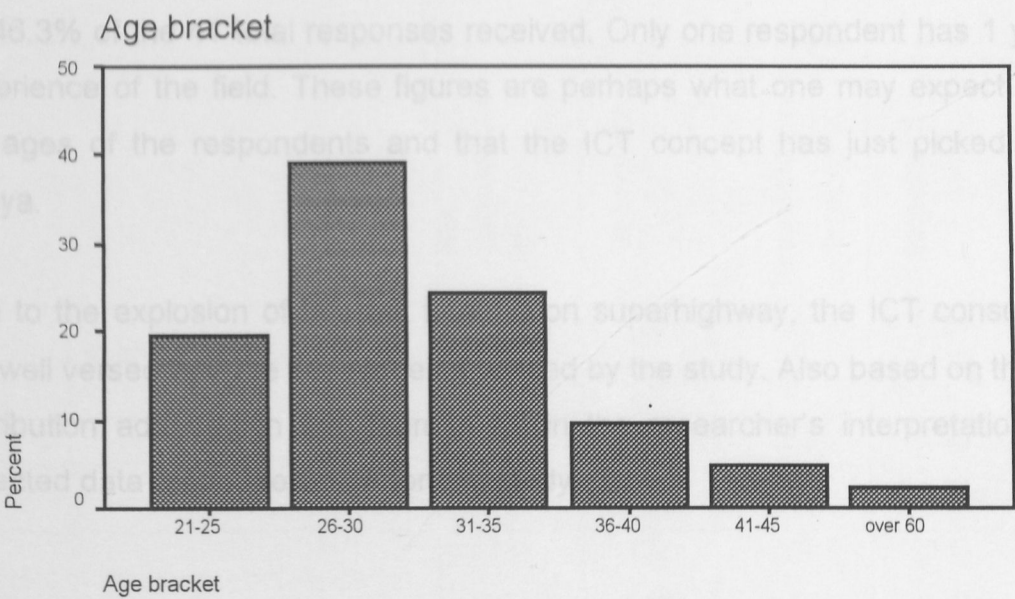
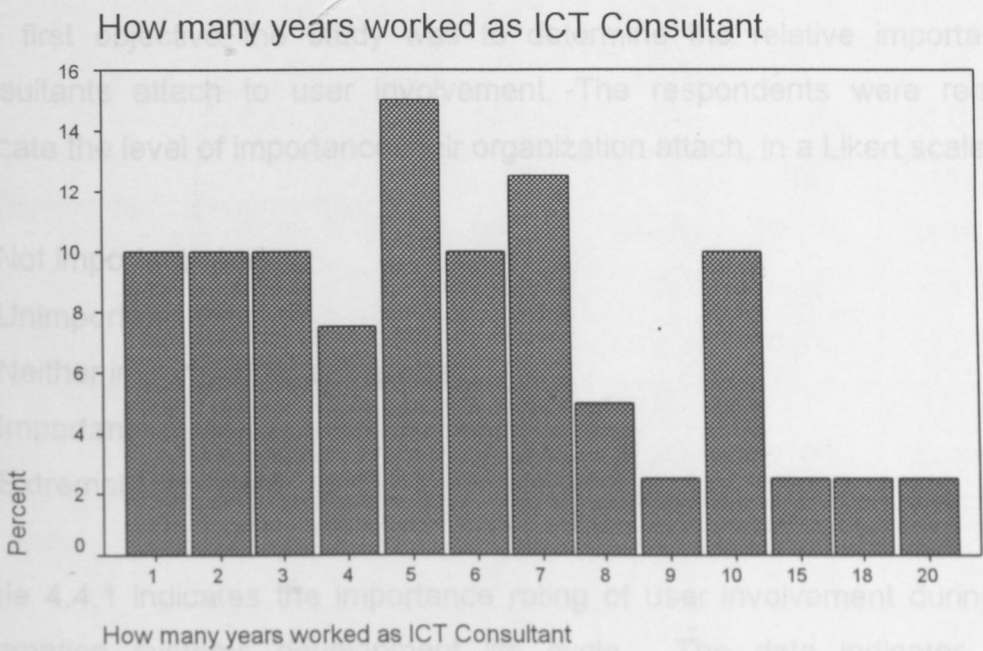


Figure 4.3.3 Experience of Respondents as ICT Consultants



Turning to experience, figure 4.3.3 demonstrates positive skewness, indicating that experience levels are not quite high in ICT consultancy in Kenya. This is confirmed by scrutiny of the actual data that shows 16 respondents working 6-10

years with ICT, and only 3 working with ICT for 11 years or more. This accounts for 46.3% of the 41 total responses received. Only one respondent has 1 year's experience of the field. These figures are perhaps what one may expect given the ages of the respondents and that the ICT concept has just picked up in Kenya.

Due to the explosion of Internet information superhighway, the ICT consultants are well versed with the issues being tackled by the study. Also based on the age distribution adduced in the figure 4.2.3 in the researcher's interpretation, the collected data can be relied on for this study.

4.4 Importance attached to user involvement

4.4.1 Introduction

The first objective the study was to determine the relative importance ICT consultants attach to user involvement. The respondents were required to indicate the level of importance their organization attach, in a Likert scale of 5:

- 1. Not important at all
- 2. Unimportant
- 3. Neither important nor unimportant
- 4. Important
- 5. Extremely important

Table 4.4.1 indicates the importance rating of user involvement during various information systems development life cycle. The data indicates how the respondents perceive user involvement in light of the challenges of systems development process.

Table 4.4.1 Importance Rating of User involvement

	Not important at all	Unimportant	Neither important nor unimportant	Important	Extremely important
1. During system investigations	(2) 4.9%	(0) 0%	(2) 4.9%	(13) 31.7%	(24) 58.5%
2. System conceptualization	(2) 4.9%	(2) 4.9%	(2) 4.9%	(22) 53.7%	(12) 29.3
3. System requirements Analysis	(3) 7.3%	(2) 4.9%	(2) 4.9%	(11) 26.8%	(23) 56.1%
4. System Formulation and inception	(2) 4.9%	(4) 9.8%	(8) 19.5%	(11) 26.8%	(14) 34.1%
5. Specification of requirements	(1) 2.4%	(1) 2.4%	(6) 14.6%	(12) 29.3%	(20) 48.8%
6. Design of the system	(6) 14.6%	(8) 19.5%	(16) 39.0%	(9) 22.0%	(1) 2.4%
7. Development (programming)	(16) 39.0%	(10) 24.4%	(9) 22.0%	(4) 9.8%	(2) 2.4%
8. Coding of software	(22) 53.7%	(6) 14.6%	(4) 9.8%	(5) 12.2%	(4) 9.8%
9. Implementation (rollout) stage	(2) 4.9%	(1) 2.4%	(3) 7.3%	(17) 41.5%	(18) 43.9%
10. Testing	(2) 4.9%	(2) 4.9%	(2) 4.9%	(15) 36.6%	(20) 48.8%
11. Maintenance Stage	(3) 7.3%	(4) 9.8%	(5) 12.2%	(21) 51.2%	(8) 19.5%
12. Planning the installation	(3) 7.3%	(7) 17.1%	(4) 9.8%	(20) 48.8%	(7) 17.1%

	Not important at all	Unimportant	Neither important nor unimportant	Important	Extremely important
13.Planning conversion	(1) 2.4%	(3) 7.3%	(4) 9.8%	(23) 56.1%	(10) 24.4%
14. Scheduling conversion	(2) 4.9%	(2) 4.9%	(2) 4.9%	(22) 53.7%	(13) 31.7%
15.Scheduliing Installation	(3) 7.3%	(2) 4.9%	(2) 4.9%	(19) 46.3%	(15) 36.6%
16. Actual conversion	(2) 4.9%	(1) 2.4%	(6) 14.6%	(16) 39.0%	(16) 39.0%
17. Actual Installation	(3) 7.3%	(3) 7.3%	(5) 12.2%	(11) 26.8%	(19) 46.3%
18. Scheduling training sessions	(1) 2.4%	(1) 2.4%	(2) 4.9%	(21) 51.2%	(16) 39.0%
19. Evaluating its performance.	(1) 2.4%	(1) 2.4%	(3) 7.3%	(15) 36.6%	(21) 51.2%

Further Analysis of Importance attached to user involvement

For the purpose of graphical comparison Figure 4.4.1, the factors were reduced to three level combined as follows

Not important and unimportant added to be come not important (1+2)

Neither important nor unimportant remained

Important and extremely important combined (4+5) = Important

This results in the graph figure 4.4.1, which clearly indicates the level of importance as the scores were plotted on an X-Y axis for ease in presentation.

These results showed that the ICT consultants attach a lot of importance to the

early and later stages of systems development and very little on design, coding and programming. This is in line with the theory and hence relevant in for the study.

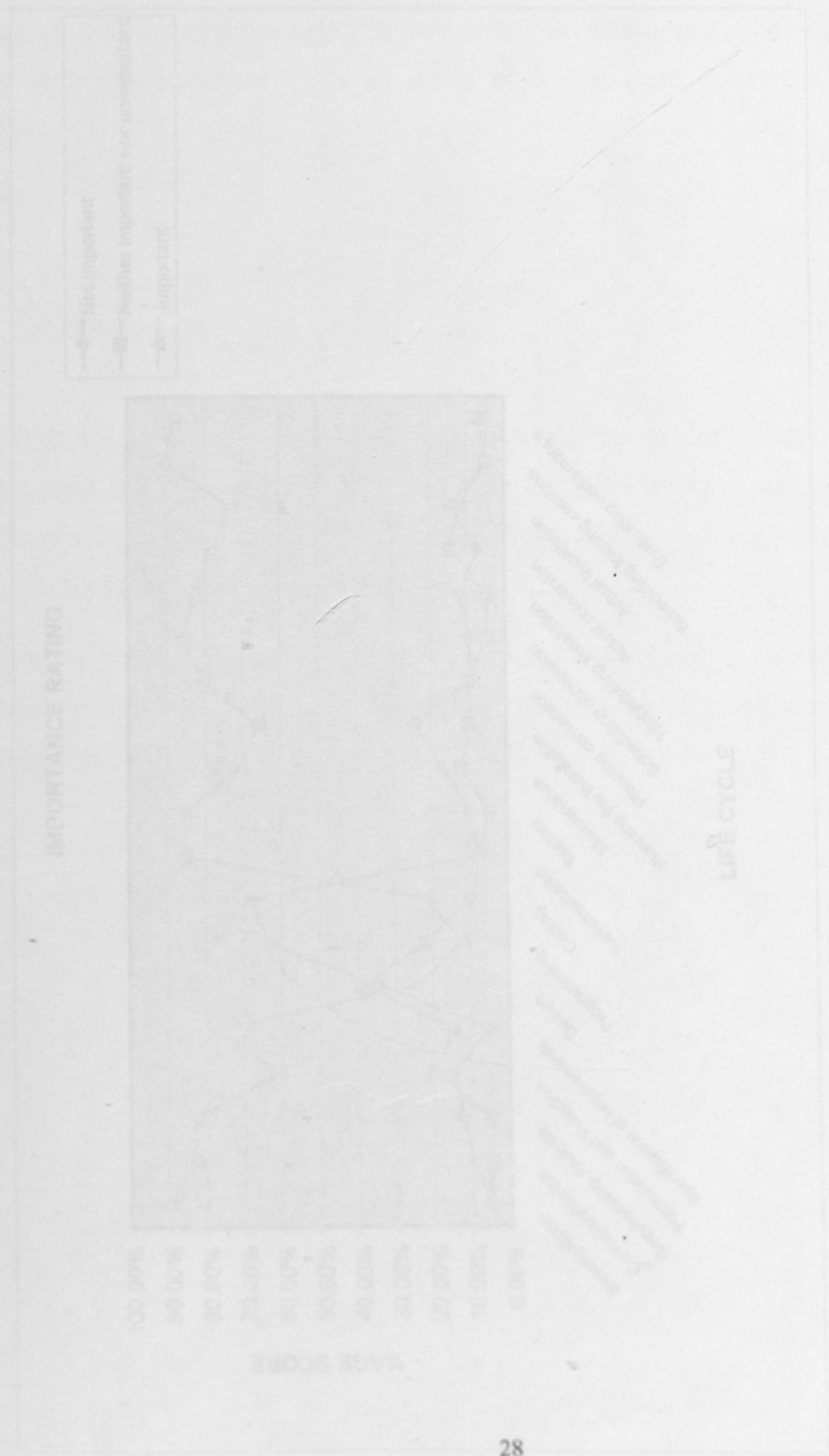


Figure 4.4.1 Importance Rating of User Involvement

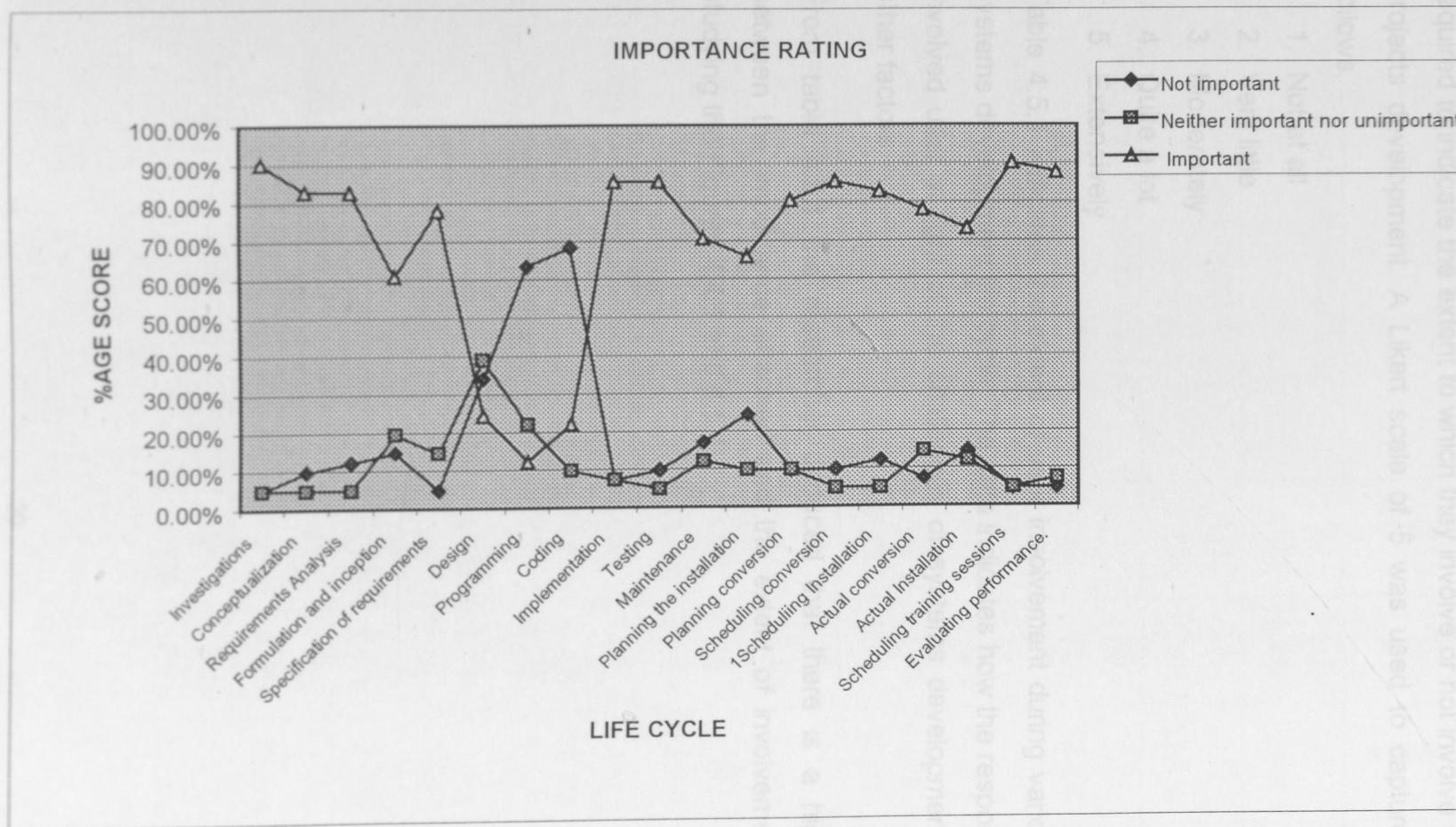


Figure 4.4.1 Importance Rating of User involvement

4.5 Extent of Involvement (in practice) in Information Systems Development

The second objective the study was to determine the extent to which ICT consultants involve users in systems development. The respondents were required to indicate the extent to which they involve or not involve the users in IS projects development. A Likert scale of 5 was used to capture the data as follows.

1. During system investigations	(2)	(1)	(4)	(16)	(18)
1. Not at all	4.9%	2.4%	9.8%	39.0%	43.9%
2. System conceptualization	(3)	(3)	(7)	(22)	(6)
2. Very little	7.3%	7.3%	17.1%	53.7%	14.6%
3. Moderately	(3)	(0)	(5)	(14)	(19)
3. Quite a lot	7.3%	0%	12.2%	34.1%	46.3%
4. Extensively	(3)	(1)	(7)	(15)	(15)
4. Not at all	7.3%	2.4%	19.5%	39.0%	31.7%

Table 4.5.1 indicates the extent of user involvement during various information systems development life cycle. The data indicates how the respondents actually involved user in light of the challenges of systems development process and other factors.

From table 4.5.1 the researcher deduced that there is a high relationship between the importance attached and the extent of involvement. This is by studying the Figures 4.4.1 and 4.5.1.

5. System requirements analysis	(19)	(6)	(10)	(1)	(3)
5. Not at all	48.3%	19.5%	24.4%	2.4%	7.3%
6. Coding of software	(29)	(4)	(7)	(1)	(0)
6. Very little	70.7%	9.8%	17.1%	2.4%	0%
7. Implementation (rollout) stage	(2)	(3)	(3)	(17)	(16)
7. Moderately	4.9%	7.3%	7.3%	41.5%	39.0%
8. Testing	(1)	(1)	(1)	(19)	(19)
8. Quite a lot	2.4%	2.4%	2.4%	46.3%	46.3%
9. Maintenance Stage	(4)	(2)	(14)	(17)	(7)
9. Not at all	9.8%	4.9%	26.8%	41.5%	17.1%
10. Planning the installation	(2)	(7)	(7)	(17)	(8)
10. Very little	4.9%	17.1%	17.1%	41.5%	19.5%

Table 4.5.1 Extent of user Involvement in Information Systems Development

	Not at all	Very little	Moderately	Quite a lot	Extensively
1. During system investigations	(2) 4.9%	(1) 2.4%	(4) 9.8%	(16) 39.0%	(18) 43.9%
2. System conceptualization	(3) 7.3%	(3) 7.3%	(7) 17.1%	(22) 53.7%	(6) 14.6%
3. System requirements Analysis	(3) 7.3%	(0) 0%	(5) 12.2%	(14) 34.1%	(19) 46.3%
4. System Formulation and inception	(5) 12.2%	(5) 12.2%	(12) 29.3%	(9) 22.0%	(9) 22.0%
5. Specification of requirements	(3) 7.3%	(1) 2.4%	(8) 19.5%	(16) 39.0%	(13) 31.7%
6. Design of the system	(7) 17.1%	(11) 26.8%	(14) 34.1%	(6) 14.6%	(3) 7.3%
7. Development (programming)	(19) 46.3%	(8) 19.5%	(10) 24.4%	(1) 2.4%	(3) 7.3%
8. Coding of software	(29) 70.7%	(4) 9.8%	(7) 17.1%	(1) 2.4%	(0) 0%
9. Implementation (rollout) stage	(2) 4.9%	(3) 7.3%	(3) 7.3%	(17) 41.5%	(16) 39.0%
10. Testing	(1) 2.4%	(1) 2.4%	(1) 2.4%	(19) 46.3%	(19) 46.3%
11. Maintenance Stage	(4) 9.8%	(2) 4.9%	(11) 26.8%	(17) 41.5%	(7) 17.1%
12. Planning the installation	(2) 4.9%	(7) 17.1%	(7) 17.1%	(17) 41.5%	(8) 19.5%

	Not at all	Very little	Moderately	Quite a lot	Extensively
13.Planning conversion	(2) 4.9%	(4) 9.8%	(8) 19.5%	(16) 39.0%	(11) 26.8%
14. Scheduling conversion	(2) 4.9%	(4) 9.8%	(5) 12.2%	(20) 48.8%	(10) 24.4%
15.Scheduliing Installation	(1) 2.4%	(5) 12.2%	(4) 9.8%	(20) 48.8%	(11) 26.8%
16. Actual conversion	(3) 7.3%	(1) 2.4%	(7) 17.1%	(11) 26.8%	(19) 46.3%
17. Actual Installation	(5) 12.2%	(3) 7.3%	(5) 12.2%	(16) 39.0%	(12) 29.3%
18. Scheduling training sessions	(2) 4.9%	(1) 2.4%	(2) 4.9%	(21) 51.2%	(15) 36.6%
19. Evaluating its performance.	(2) 4.9%	(0) 0%	(2) 4.9%	(10) 24.4%	(27) 65.9%

Further Data analysis on the Extent

For the purpose of graphical comparison, the factors were reduced to three level combined as follows

Not at all + Very little (1+2)

Moderate (3)

Extensively (4+5)

This results in the figure 4.5.1, which clearly indicates the extent of involvement as the scores were plotted on an X-Y axis for ease in presentation. These results showed that the ICT consultants extensively involve user in the early stages and later stages of systems development and very little on design, coding and programming. This is in line with the theory and hence relevant in for the study.

Turning to Extent of users involvement during systems development life cycle, the figure 4.5.1 demonstrates that, in keeping with involvement during systems development, there is consensus of action across the organizations involved in the survey as to the degree of involvement of users during system implementation. Of the 41 responses, over 50% report that they involved 'quite a lot' and 'extensively'- in the early stages of systems development and the late stages. But during design, programming and coding they involved users very little or no at all. This is in line with the theoretical data collected and presented in Table 4.6.1 and Figure 4.6.1.



Figure 4.5.1 Extent of User Involvement in IS Development

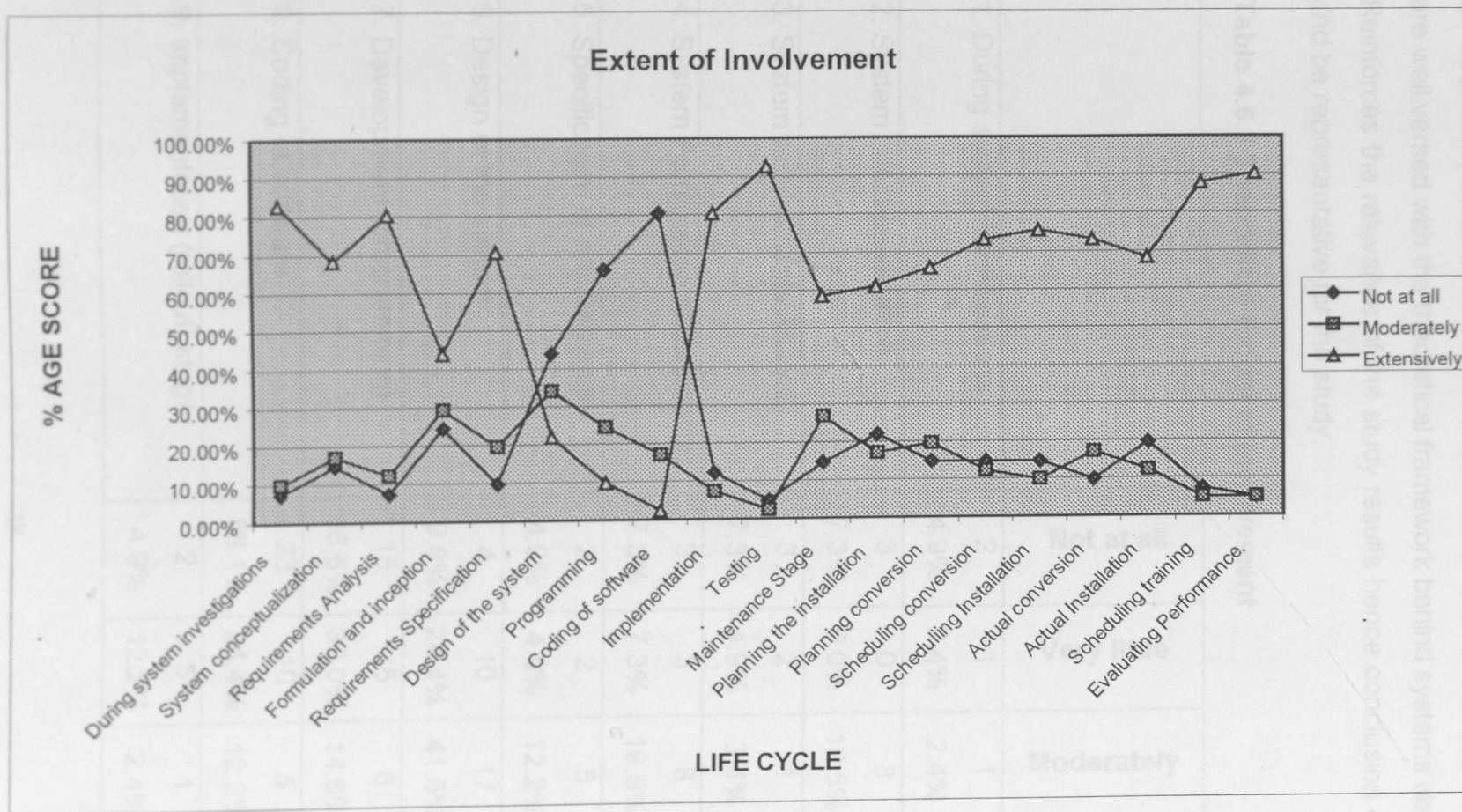


Figure 4.5.1 Extent of User involvement in IS Development

4.6 Expected Extent of Involvement

Table 4.6.1 represents the theoretical information on what the respondents know on user involvement. The information adduced shows that the ICT consultants are well versed with the theoretical framework behind systems development. This Reinforces the relevance of the study results hence conclusion can de deduced and be representative for the study.

Table 4.6.1 Theoretical Extent of Involvement

	Not at all	Very little	Moderately	Quite a lot	Extensively
1. During system investigations	2 4.9%	1 2.4%	1 2.4%	10 24.4%	27 65.9%
2. System conceptualization	3 7.3%	0 0.0%	8 19.5%	14 34.1%	16 39.0%
3. System requirements Analysis	3 7.3%	2 4.9%	1 2.4%	14 34.1%	21 51.2%
4. System Formulation and inception	3 7.3%	3 7.3%	8 19.5%	14 34.1%	12 29.3%
5. Specification of requirements	2 4.9%	2 4.9%	5 12.2%	13 31.7%	18 43.9%
6. Design of the system	4 9.8%	10 24.4%	17 41.5%	8 19.5%	2 4.9%
7. Development (programming)	15 36.6%	16 39.0%	6 14.6%	2 4.9%	2 4.9%
8. Coding of software	23 56.1%	10 24.4%	5 12.2%	2 4.9%	1 2.4%
9. Implementation (rollout) stage	2 4.9%	5 12.2%	1 2.4%	16 39.0%	17 41.5%

	Not at all	Very little	Moderately	Quite a lot	Extensively
10. Testing	3 7.3%	0 0%	2 4.9%	18 43.9%	18 43.9%
11. Maintenance Stage	4 9.8%	0 0.0%	9 22.0%	18 43.9%	9 22.0%
12. Planning the installation	1 2.4%	1 2.4%	7 17.1%	19 46.3%	13 31.7%
13.Planning conversion	1 2.4%	1 2.4%	6 14.6%	18 43.9%	14 34.1%
14. Scheduling conversion	2 4.9%	1 2.4%	6 14.6%	19 46.3%	12 29.3%
15.Scheduliing Installation	1 2.4%	2 4.9%	5 12.2%	18 43.9%	14 34.1%
16. Actual conversion	1 2.4%	4 9.8%	5 12.2%	15 36.6%	15 36.6%
17. Actual Installation	6 14.6%	2 4.9%	1 2.4%	14 34.1%	17 41.5%
18. Scheduling training sessions	0 0.00%	0 0.00%	4 9.8%	16 39.0%	20 48.8%
19. Evaluating its performance.	0 0.00%	0 0.00%	4 9.8%	7 17.1%	24 58.5%

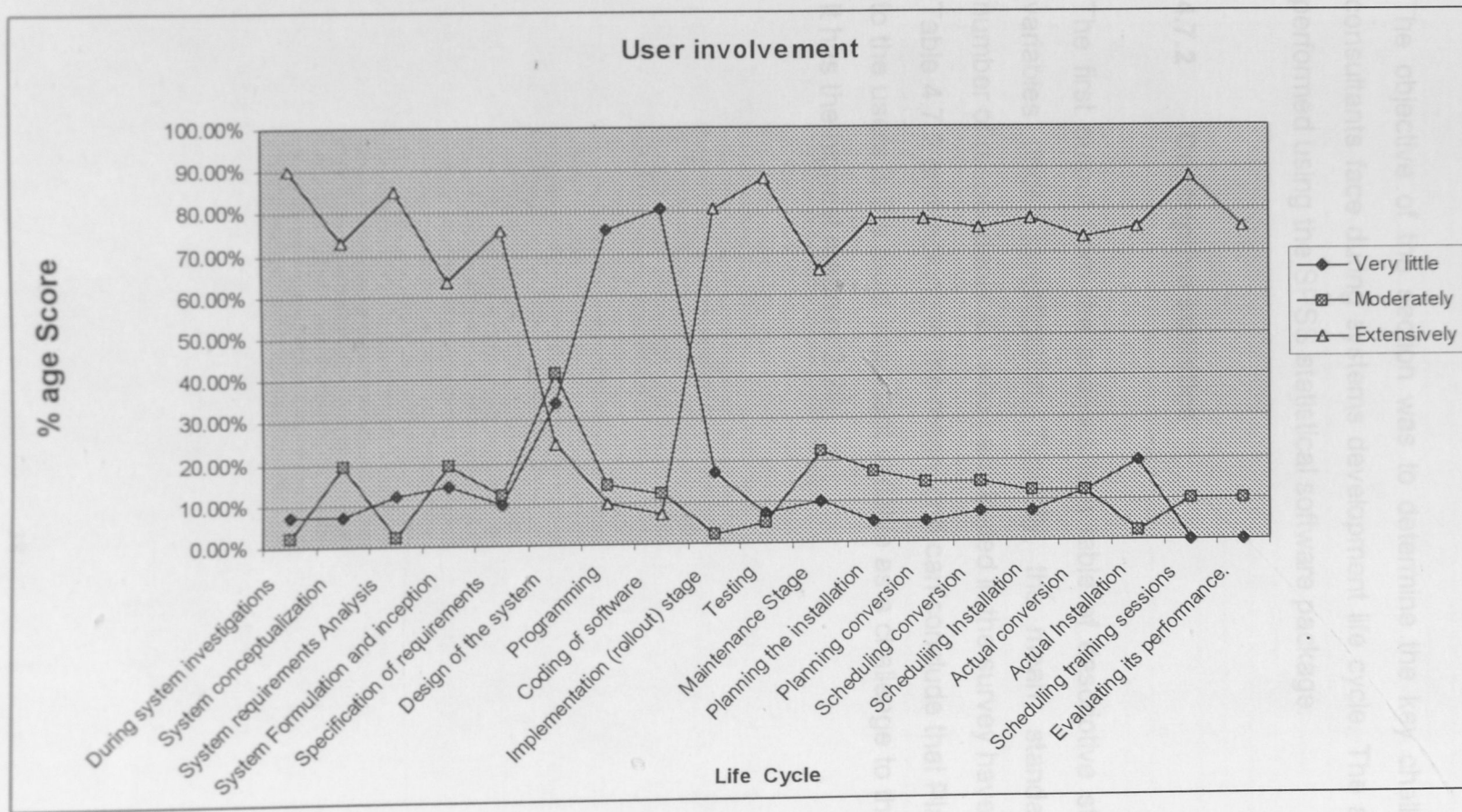


Figure 4.6.1 Theoretical Extent of User involvement

4.7 Factor analysis to challenges faced by ICT consultant during user involvement

4.7.1 Introduction

The objective of the section was to determine the key challenges which ICT consultants face during systems development life cycle. The analysis has been performed using the SPSS statistical software package.

4.7.2 Descriptive statistics

The first output from the analysis is a table of descriptive statistics for all the variables under investigation. Typically, the mean, standard deviation and number of respondents (N) who participated in the survey have been given. From Table 4.7.2 and looking at the mean, one can conclude that Play down on impact to the users is the most important variable as a challenge to the ICT consultants. It has the highest mean of 2.29.

The respondents indicated the various challenges they face and rated them as per the research instrument (as shown in Appendix I). Due to the possibility that there are some of the respondents indicated they faced, some and other was overlooked. The factor analysis has been used to identify the cluster or grouping of related activities as marked by the respondents. Thus resolving sets of variables, which are linearly correlated in terms of small number of factors. This resolution can be accomplished through correlations analysis of the variables used (Hairman, 1978).

Table 4.7.2 is a correlation matrix, which has been extracted using component analysis method, and attempt has been made to reduce it down to its component. In a correlation matrix of variables, the existence of clusters of large

Table 4.7.1 Descriptive statistics sets of variables indicates that the variables could be measuring the same dimension or factor (Field, 2000)

	Mean	Std. Deviation	Analysis N
Cost constraints	1.46	.60	41
Company policy	1.83	.95	41
Ignorance of user needs	1.85	.94	41
Inflexible systems	1.90	.89	41
Play down on impact	2.29	.84	41
Incompetent IT staff	1.95	1.00	41
Marketing and sales issues	2.05	.92	41
Company politics	1.88	.90	41
Time limitation	1.90	.92	41
Bureaucracy constraints	1.85	.88	41
Unrealistic expectations	2.02	1.06	41
Poor coordination	1.83	.92	41
Users' resistance	1.85	1.15	41
Lack of system of ownership	2.02	1.01	41
Conflicts of interest	2.05	.95	41
No knowledge about the system	2.12	.84	41
Creation of unimportant features	2.27	.84	41
Users disinterest	2.12	1.00	41
Project delay	1.71	.90	41
Diminishes project success	2.27	.95	41
Lack of experience	2.00	.89	41

4.7.3 The Correlation Matrix

The respondents indicated the various challenges they face and rated them as per the research instrument (as shown in Appendix I). Due to the possibility that there are some of the respondents indicated they faced some and other was overlooked. The factor analysis has been used to identify the cluster or grouping of related activities as marked by the respondents. Thus resolving sets of variables, which are linearly correlated in terms of small number of factors. This resolution can be accomplished through correlations analysis of the variables used (Harman, 1976).

Table 4.7.2 is a correlation matrix, which has been extracted using component analysis method, and attempt has been made to reduce it down to its component. In a correlation matrix of variables, the existence of clusters of large

correlation coefficients among subsets of variables indicates that the variables could be measuring the same underlying dimension or factor (Field, 2000)

Table 4.7.2 Correlation Matrix (Next Page)

Correlation
Matrix

Total Variance Explained

Correlation	Cost constraints	Company policy	Ignorance of user needs	Inflexible systems	Play down on impact	Incompetent IT staff	Marketing and sales issues	Company politics	Time limitation	Bureaucracy constraints	Unrealistic expectations	Poor coordination	Users' resistance	Lack of system ownership	Conflicts of interest	No knowledge about the system	Creation of unimportant features	Users disinterested	Project delay	Diminishes project success	Lack of experience
Cost constraints	1	0.188	0.259	0.182	0.221	0.249	0.231	0.155	0.268	0.275	0.1	0.011	-0.008	0.147	0.136	0.233	0.396	0.154	0.399	0.394	0.528
Company policy	0.188	1	0.31	-0.169	0.127	0.282	0.125	0.298	0.096	0.239	0.079	-0.092	-0.046	0.213	0.205	0.246	0.312	0.338	-0.001	0.219	0.118
Ignorance of user needs	0.259	0.31	1	0.813	0.087	0.259	-0.02	0.008	-0.017	0.307	0.482	0.115	0.35	0.083	0.121	0.213	0.147	-0.034	0.214	-0.059	0.149
Inflexible systems	0.182	-0.169	0.813	1	0.139	0.22	0.189	0.047	0.049	0.236	0.506	0.316	0.401	0.058	-0.024	0.116	0.036	-0.014	0.555	0.18	0.346
Play down on impact	0.221	0.127	0.087	0.139	1	0.492	0.303	0.344	0.296	0.428	0.299	0.42	0.199	0.255	0.419	0.335	0.452	0.37	0.313	0.461	0.431
Incompetent IT staff	0.249	0.282	0.259	0.22	0.492	1	0.139	0.16	0.24	0.389	0.214	0.644	0.167	0.199	0.267	0.453	0.225	0.305	0.4	0.436	0.672
Marketing and sales issues	0.231	0.125	-0.02	0.189	0.303	0.139	1	0.46	0.598	0.255	0.127	0.158	-0.087	0.321	0.199	0.508	0.307	0.345	0.5	0.671	0.394
Company politics	0.155	0.298	0.008	0.047	0.344	0.16	0.46	1	0.5	0.229	0.187	0.035	0.223	0.141	0.447	0.284	0.542	0.296	0.14	0.303	0.063
Time limitation	0.268	0.096	-0.017	0.049	0.296	0.24	0.598	0.5	1	0.26	0.234	0.395	0.081	0.407	0.293	0.372	0.195	0.23	0.389	0.519	0.335
Bureaucracy constraints	0.275	0.239	0.397	0.236	0.428	0.389	0.255	0.229	0.26	1	0.485	0.369	0.323	0.396	0.308	0.058	0.258	0.105	0.259	0.197	0.222
Unrealistic expectations	0.1	0.079	0.482	0.506	0.299	0.214	0.127	0.187	0.234	0.485	1	0.415	0.576	0.372	0.422	0.053	0.133	-0.05	0.348	0.192	0.185
Poor coordination	0.011	-0.092	0.115	0.316	0.42	0.944	0.158	0.035	0.395	0.369	0.415	1	0.306	0.569	0.412	0.318	0.158	0.185	0.481	0.455	0.698
Users' resistance	-0.008	-0.046	0.35	0.401	0.199	0.167	-0.087	0.223	0.081	0.323	0.576	0.306	1	0.346	0.51	-0.058	0.197	-0.071	0.078	-0.055	0.121
Lack of system ownership	0.147	0.213	0.083	0.058	0.255	0.199	0.321	0.141	0.407	0.396	0.372	0.569	0.346	1	0.52	0.231	0.258	0.415	0.337	0.409	0.359
Conflicts of interest	0.136	0.205	0.121	-0.024	0.419	0.267	0.169	0.447	0.293	0.308	0.422	0.412	0.51	0.52	1	0.368	0.582	0.204	0.194	0.235	0.325
No knowledge about the system	0.233	0.246	0.213	0.116	0.335	0.453	0.508	0.284	0.372	0.058	0.053	0.318	-0.058	0.231	0.368	1	0.449	0.543	0.213	0.489	0.365
Creation of unimportant features	0.396	0.312	0.147	0.036	0.452	0.225	0.307	0.542	0.105	0.258	0.133	0.158	0.197	0.258	0.582	0.449	1	0.346	0.173	0.316	0.2
Users disinterested	0.154	0.338	-0.034	-0.014	0.37	0.305	0.345	0.296	0.23	0.105	-0.05	0.185	-0.071	0.415	0.204	0.543	0.346	1	-0.015	0.489	0.278
Project delay	0.399	-0.001	0.214	0.555	0.313	0.4	0.5	0.14	0.388	0.259	0.348	0.481	0.078	0.337	0.194	0.213	0.173	-0.015	1	0.532	0.951
Diminishes project success	0.394	0.219	-0.039	0.18	0.461	0.436	0.671	0.303	0.519	0.197	0.192	0.455	-0.055	0.409	0.235	0.489	0.316	0.489	0.532	1	0.618
Lack of experience	0.528	0.118	0.149	0.346	0.431	0.672	0.304	0.093	0.335	0.222	0.185	0.608	0.121	0.359	0.325	0.365	0.2	0.278	0.651	0.618	1
Cost constraints	0.119	0.051	0.127	0.083	0.058	0.073	0.167	0.045	0.041	0.296	0.472	0.48	0.18	0.198	0.071	0.005	0.168	0.005	0.005	0.084	0.231
Company policy	0.119	0.024	0.146	0.215	0.037	0.219	0.029	0.276	0.096	0.312	0.284	0.387	0.09	0.1	0.06	0.024	0.015	0.496	0.084	0.176	0.175
Ignorance of user needs	0.051	0.024	0	0.294	0.051	0.449	0.48	0.458	0.005	0.001	0.236	0.012	0.303	0.226	0.09	0.18	0.417	0.089	0.404	0.175	0.175
Inflexible systems	0.127	0.146	0	0.193	0.084	0.118	0.385	0.38	0.098	0	0.022	0.005	0.359	0.441	0.234	0.411	0.485	0	0.13	0.013	0.013
Play down on impact	0.083	0.215	0.294	0.193	0.001	0.027	0.014	0.03	0.003	0.029	0.003	0.106	0.064	0.003	0.016	0.002	0.009	0.023	0.001	0.002	0
Incompetent IT staff	0.058	0.037	0.051	0.084	0.001	0.194	0.159	0.065	0.006	0.09	0	0.148	0.106	0.046	0.001	0.078	0.028	0.005	0.002	0	0.027
Marketing and sales issues	0.073	0.219	0.449	0.118	0.027	0.194	0.001	0	0.054	0.215	0.162	0.294	0.02	0.145	0	0.025	0.014	0	0	0.027	0.281
Company politics	0.167	0.029	0.48	0.385	0.014	0.159	0.001	0	0.075	0.121	0.415	0.08	0.19	0.002	0.036	0	0.047	0.192	0.027	0.281	0.281
Time limitation	0.045	0.276	0.458	0.38	0.03	0.095	0	0	0.05	0.07	0.009	0.308	0.004	0.031	0.008	0.151	0.074	0.006	0	0.016	0.016
Bureaucracy constraints	0.041	0.096	0.005	0.098	0.003	0.006	0.054	0.075	0.05	0.001	0.009	0.02	0.005	0.025	0.359	0.052	0.256	0.051	0.108	0.082	0.082
Unrealistic expectations	0.299	0.312	0.001	0	0.029	0.09	0.215	0.121	0.07	0.001	0.004	0	0.008	0.003	0.372	0.203	0.379	0.013	0.115	0.124	0.124
Poor coordination	0.004	0.026	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0
Users' resistance	0.48	0.387	0.012	0.005	0.195	0.148	0.294	0.08	0.308	0.02	0	0.026	0	0.013	0	0.358	0.108	0.331	0.314	0.357	0.225
Lack of system ownership	0.18	0.09	0.303	0.359	0.054	0.106	0.02	0.19	0.004	0.005	0.008	0	0.013	0	0.073	0.052	0.003	0.016	0.004	0.011	0.011
Conflicts of interest	0.196	0.1	0.226	0.441	0.003	0.046	0.345	0.002	0.031	0.025	0.003	0.004	0	0	0.009	0	0.101	0.153	0.089	0.019	0.019
No knowledge about the system	0.071	0.06	0.09	0.234	0.016	0.001	0	0.036	0.008	0.359	0.372	0.021	0.358	0.073	0.009	0.002	0	0.091	0.001	0.001	0.009
Creation of unimportant features	0.005	0.024	0.18	0.411	0.002	0.078	0.025	0	0.151	0.052	0.203	0.161	0.108	0.052	0	0.002	0.013	0.14	0.022	0.105	0.105
Users disinterested	0.168	0.015	0.417	0.465	0.009	0.026	0.014	0.047	0.074	0.256	0.379	0.123	0.331	0.003	0.101	0	0.14	0.463	0	0	0
Project delay	0.005	0.406	0.089	0	0.023	0.005	0	0.192	0.006	0.051	0.013	0.001	0.314	0.016	0.153	0.091	0.14	0.463	0	0	0
Diminishes project success	0.005	0.084	0.404	0.13	0.001	0.002	0	0.027	0	0.108	0.115	0.001	0.367	0.004	0.069	0.001	0.022	0.001	0	0	0
Lack of experience	0.018	0.231	0.175	0.013	0.002	0	0.027	0.281	0.016	0.082	0.124	0	0.225	0.011	0.019	0.009	0.105	0.039	0	0	0

Determinant
= 1.350E-07

Table 4.7.3 Total Variance Explained

Factors	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% Of Variance	Cumulative %	Total	% Of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	7.022	33.437	33.437	7.022	33.437	33.437	3.66	17.426	17.426
2	2.427	11.557	44.994	2.427	11.557	44.994	3.121	14.862	32.288
3	2.316	11.028	56.022	2.316	11.028	56.022	3.032	14.436	46.724
4	1.611	7.673	63.695	1.611	7.673	63.695	2.5	11.906	58.63
5	1.357	6.461	70.156	1.357	6.461	70.156	2.123	10.109	68.739
6	1.187	5.65	75.806	1.187	5.65	75.806	1.484	7.067	75.806
7	0.873	4.157	79.963						
8	0.811	3.86	83.823						
9	0.684	3.256	87.079						
10	0.66	3.141	90.22						
11	0.428	2.036	92.256						
12	0.354	1.684	93.94						
13	0.338	1.609	95.549						
14	0.25	1.189	96.738						
15	0.226	1.078	97.816						
16	0.141	0.671	98.486						
17	0.11	0.526	99.012						
18	9.15E-02	0.436	99.448						
19	5.89E-02	0.281	99.729						
20	3.85E-02	0.183	99.912						
21	1.85E-02	8.81E-02	100						

Extraction Method: Principal Component Analysis.

4.7.4 The Communalities

From table 4.7.3, it can be noted that the percentage of variance explained by all the activities have associated variance reflecting the variations of the respondents. The amount of variance for each activity is explained by a specific factor, which is the communality of the variable. In this case communality is the percentage of an activity variance that contributes to the correlation with other activities or is common to others.

Table 4.7.4 shows calculated communalities extracted using the Principal Component Analysis method.

Table 4.7.4 Communalities

Communalities		
	Initial	Extraction
Cost constraints	1.000	.487
Company policy	1.000	.773
Ignorance of user needs	1.000	.839
Inflexible systems	1.000	.784
Play down on impact	1.000	.560
Incompetent IT staff	1.000	.768
Marketing and sales issues	1.000	.817
Company politics	1.000	.737
Time limitation	1.000	.696
Bureaucracy constraints	1.000	.562
Unrealistic expectations	1.000	.745
Poor coordination	1.000	.870
Users' resistance	1.000	.761
Lack of system of ownership	1.000	.782
Conflicts of interest	1.000	.789
No knowledge about the system	1.000	.585
Creation of unimportant features	1.000	.777
Users disinterest	1.000	.608
Project delay	1.000	.787
Diminishes project success	1.000	.785
Lack of experience	1.000	.778

Extraction Method: Principal Component Analysis.

4.7.5 Factor Extraction

From table 4.7.3, it can be noted that the percentage of variance explained indicates how much of the total original variance of all the activities is explained by a specific factor. It can be noted that 21 factors were extracted and only six (6) were retained for further analysis. Those retained are factors with Eigen values greater than one. This is a measure of how well each of the identified factors fit the data from all respondents on all statements. Principal Component Analysis method has been used in this case also.

4.7.6 Kaiser-Meyer-Olkin (KMO) and Bartlett's test

The next item from the output is the Kaiser-Meyer-Olkin (KMO) and Bartlett's test. The KMO measures the sampling adequacy, which should be greater than 0.5 for a satisfactory factor analysis to proceed. Looking at table 4.7.5, the KMO measure is 0.593. From the table, it can be seen that the Bartlett's test of sphericity is significant. That is, its associated probability is less than 0.05. In fact, it is actually 0.000. This means that the correlation matrix is not an identity matrix. Hence further analysis on the data can be conducted.

Table 4.7.5 Sphericity Test

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.593
Bartlett's Test of Sphericity	Approx. Chi-Square	508.805
	df	210
	Sig.	.000

4.7.7 The Scree Plot

The plot confirms the selection of only six (6) factors, these are the factors with an Eigen values greater than 1.0. The point of inflexion on the curve indicates the number of factors extracted; from figure 4.7.1 only six (6) factors are significant for enough for consideration.

Figure 4.7.1 Scree Plot

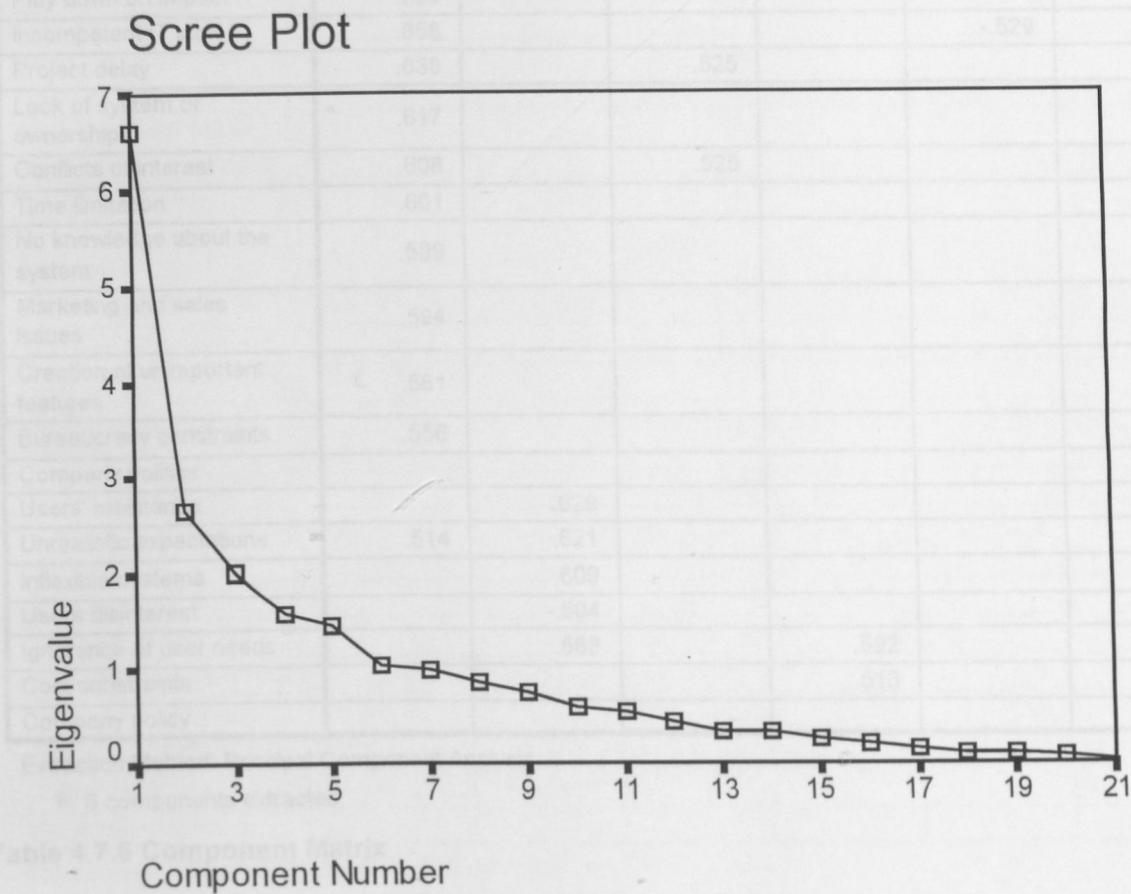


Table 4.7.5 Show how the various challenges are rated from the analysis, diminishing project success has the highest mean 0.734. This show the resultant from the challenges and their significance as extracted from the variables. The variables have now been grouped into 6 components from the extraction method.

Component Matrix^a

	Component					
	1	2	3	4	5	6
Diminishes project success	.734					
Lack of experience	.702					
Poor coordination	.666					
Play down on impact	.659					
Incompetent IT staff	.658				-.529	
Project delay	.638		-.525			
Lack of system of ownership	.617					
Conflicts of interest	.608		.525			
Time limitation	.601					
No knowledge about the system	.599					
Marketing and sales issues	.594					
Creation of unimportant features	.561					
Bureaucracy constraints	.556					
Company politics						
Users' resistance		.629				
Unrealistic expectations	.514	.621				
Inflexible systems		.609				
Users disinterest		-.504				
Ignorance of user needs		.568		.592		
Cost constraints				.513		
Company policy						

Extraction Method: Principal Component Analysis.

a. 6 components extracted.

Table 4.7.6 Component Matrix

Table 4.7.6 Show how the various challenges are rated from the analysis, diminishing project success has the highest mean 0.734. This show the resultant from the challenges and their significance as extracted from the variables. The variables have now been grouped into 6 components from the extraction method.

Component Transformation Matrix

Component	1	2	3	4	5	6
1	.580	.483	.345	.394	.254	.210
2	-.008	.398	.528	-.274	.485	-.351
3	-.458	-.315	.415	.581	-.219	.355
4	.250	.001	.001	.001	.792	-.389

Rotated Component Matrix^a

	Component					
	1	2	3	4	5	6
Lack of experience	.810					
Incompetent IT staff	.803					
Poor coordination	.771					
Play down on impact	.513					
No knowledge about the system						
Marketing and sales issues		.858				
Time limitation		.773				
Diminishes project success	.529	.668				
Project delay		.534				
Users' resistance			.766			
Unrealistic expectations			.764			
Lack of system of ownership			.628			
Bureaucracy constraints			.583			
Creation of unimportant features				.828		
Company politics				.720		
Conflicts of interest			.552	.622		
Ignorance of user needs					.770	
Inflexible systems					.758	
Cost constraints					.511	
Company policy						.852
Users disinterest						.546

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 10 iterations.

Table 4.7.7 Rotated Component Matrix

From table 4.7.7 the components are classified according to their weighted mean thus resulting to the group of the factors being sought.

Diminishing project success

Project Delay

Factor 3

User's resistance to change

Component Transformation Matrix

Component	1	2	3	4	5	6
1	.586	.483	.399	.394	.254	.210
2	-.008	-.398	.639	-.274	.485	-.351
3	-.456	-.311	.415	.591	-.219	.355
4	-.250	-.054	-.380	.105	.792	.389
5	-.587	.651	.119	.113	.116	-.438
6	-.204	.291	.319	-.630	-.104	.603

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

Table 4.7.8 Component Transformation Matrix

4.7.8 Factors isolation

From the three tables 4.7.6, 4.7.7 and 4.7.8 isolation of the six (6) factors was achieved through factor rotation of the component matrix. The factors were based on their loadings, which are their correlation between the factors and the original challenges are classified below. This has been extracted using Principal Component Analysis method.

Factor1

- Lack of experience
- Incompetent IT staff
- Poor coordination
- Play down on user needs

Factor 2

- Marketing and sales issues
- Time limitation
- Diminishing project success
- Project Delay

Factor 3

- User's resistance to change

- Unrealistic expectations
- Lack of systems ownership
- Bureaucracy constraints

Factor 4

- Creation of unimportant features
- Company politics
- Conflict of interest

Factor 5

- Ignorance of users' needs
- Inflexible existing systems
- Cost constraints

Factor 6

- Company policy
- Users' disinterest on the project

These factors revolve around the quality of IT staff employed by organization, internal organizations constraints and priorities, fears of users on losing their jobs and their resistance to embrace change, company politics, and cost implications on the new system to the organization.

CHAPTER 5:

CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This final chapter of the study highlights some of the findings, conclusions, recommendations and the suggestions for further research.

5.2 Summary of Findings

5.2.1 Demographic information

Demographic data was collected as way of enriching the study and to get a profile of the respondents. This would indicate the type of population and thus validate the study.

It was found that no respondents are less than 20 years old; the vast majority of respondents are aged between 20 and 35, with almost 39% (16) of the 41 respondents being aged between 26 and 30. Of the 41 respondents only 2 are over 41 years of age, and only 1 is over 60 years of age.

Also found that experience levels are not quite high in ICT consultancy in Kenya. This is confirmed by scrutiny of the actual data that shows 16 respondents working 6-10 years with ICT, and only 3 working with ICT for 11 years or more. This accounts for 46.3% of the 41 total responses received. This implies that the ICT concept in Kenya is new. Thus dominated by either foreign owned or a joint venture between the foreign and local share holding.

5.2.2 Relative importance ICT attach to user involvement

The study determined that all ICT consultant attach a lot of importance to user involvement in IS systems development lifecycle. This indicates the level of professionalism in systems development employed by the responding consultants.

5.3 Conclusions

5.2.3 Extent of Users' involvement

The main finding of this study is that a relationship exists between the extent

The study aimed at establishing the current position on user involvement in IS projects in Kenya. The finding through graphical representation shows that ICT consultants involve users at all stages of systems development. But the stages with minimal involvement are design, programming and coding. This is in line with theory and the importance they attach to the exercise. This shows that the ICT consultants have well laid down policy on systems development in order to achieve systems success. As stated by Baroudi (1986) that involvement throughout all stages of development is vital if the delivered system is to be seen as useful by the stakeholders. Similarly Land and Hirschheim (1983) advocate that participation (involvement) during the implementation process is necessary if a positive attitude towards the computer system is to follow. Also in line with O'Brien (2002) who advocate involvement as a prerequisite for system success, stating that the implementation stage should be 'dominated by the clients' who must, *inter alia*, consider the effect(s) that the new system has on the working practices of the staff.

In summary, the main aim of this research study was to determine whether

5.2.4 Challenges of User involvement

The third objective was to determine the challenges faced during user involvement in systems development. Factor analysis was employed to generate the cluster of challenges as they were given preference by the consultants. It was found that only six (6) factor were extracted as the main challenges. These factors revolves around the quality of IT staff employed by organization, internal organizations constraints and priorities, Fears of users and their resistance to embrace change, company politics, and cost implications on the new system to the organization.

5.3 Conclusions

The main finding of this study is that a relationship exists between the extent to which users are involved during development of their computer system and the perceived importance the ICT consultants attach to users involvement. This can be deduced from the graphical charts of Importance rating and the extent of involvement in chapter 4.

Given that this research reports a high level of users involvement during the systems development cycle, the findings from this study does not appear to reinforce Ives and Olson's (1984) conclusion that the case for user involvement during development has not been strongly demonstrated. Clearly, there is a need for further study to ascertain whether users involvement during development is a valid prerequisite for the successful implementation of a computer system, or, whether users involvement is not particularly important as a determinant of system success. This could be performed as a case study in an organization, which has implemented an Information system in the recent past as opposed to ICT consultants.

In summary, the main aims of this research study was to determine whether the ICT consultants in Kenya have implemented a policy on users involvement in information systems development cycle, this has been identified to be so given the level of importance attached to user involvement. Also the degree of users involvement during system implementation cycle indicates a high relationship between the importance attached and the extent to which users are involved. Thus confirming existence of policies governing systems development life cycle among the ICT consultants in Kenya.

Another key finding is that the main challenges to user involvement have to do with organizations issues as opposed to external environment. This can be deduced from the clusters of the factors extracted through factor analysis.

5.4 Recommendations

- 1 ICT consultants should involve stakeholders as much as possible during the Information systems development life cycle as this has a bearing on the perceived usefulness of the delivered system
- 2 Top management of organizations should be sensitized on the need to involve all the stakeholders during systems development. This help in reducing the challenges, which are mainly intrinsic with organizations operations.
- 3 Seminars and workshops should be regularly conducted to highly the importance of users involvement in systems development as a prerequisite for systems success. Also enable coming up with industry-wide policy on the subject.

5.5 Areas of Further research

Clearly, further research is needed in this area. This could be achieved by:

- 1 A follow-up study in the same organizations using different methodology and hypotheses this could be by involving end-users as opposed to ICT consultants; or,
- 2 A follow-up study in organizations implementing Information systems using different stakeholders; or,
- 3 Performing the same study on different organizations and comparing the findings with the findings from this research; or,
- 4 Employing a more in-depth case study approach, as described in Stake (1995) with a small number of collaborating organizations.

This could be 'softer' and use a qualitative approach to attempt to identify these relationships.

5.6 Scope and Limitations of the Study

The study focused only on the ICT consultants. The study was concentrated only in Nairobi as the firms were taken to be the most active and a representative of ICT consultants in Kenya. Some of the limitations of the study are:

- 1 There was limited time allocated and finances for the study and so not are enough to cover a wide area of the vast study.
- 2 It was not easy to get ICT executives' staff to fill questionnaires and give adequate time to interviews and probing. Thus a "drop and pick" later strategy was adopted for the study.
- 3 Being a self-sponsored student, financial constraints were another major handle thus reduced the sample space of the study.
- 4 There is limited data available on the subject given that Information systems development is just picking up in our Country. Thus the area is not so much done and so there were no adequate materials to base the research study on was not available easily.

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Yours faithfully,

Wilson Kgwai
MBA Student

Mrs J.K. Lalel
Lecturer, Dept. of Management
Science

APPENDIX I: INTRODUCTION LETTER TO RESPONDENTS

Wilson Kigwa
P.O. Box 64633-00620
Nairobi

August 16, 2004

Dear Sir/Madam,

My name is Wilson Kigwa, a postgraduate student undertaking a Master of Business Administration (MBA) degree at the Faculty of commerce, University of Nairobi. As a partial fulfillment of the requirements for the award of the MBA degree, I am currently conducting a study on **'INFORMATION SYSTEMS PROJECTS IN KENYA: A STUDY OF USER INVOLVEMENT'**

Your firm is one of the ICT Consultant firms selected and therefore forms part of the population of study. I humbly request for your valuable time in assisting to complete the attached questionnaire. The research is intended to provide a better understanding of the prevailing Information Systems development practice in the industry.

The information provided in this study will be treated with utmost confidentiality and will not be used for any other purpose apart from its intended academic use. I hereby, therefore, undertake not to make direct reference to your name or that of your organization in any presentation or report thereto the study.

I would appreciate any additional information; in the form of suggestions and comments, which you deem necessary to make my research findings more conclusive, relevant and reflective of the study area. A copy of the research report will be availed to you as respondent. Thank you.

Yours faithfully,

Wilson Kigwa
MBA Student

Mr. J.K. Lelei
Lecturer, Dept. of Management
Science

Appendix II

Research Instrument

Users Involvement in Information Systems Development (SDLC)

Questionnaire

Please complete the questions as accurate and as complete as possible.
And return the completed questions as soon as you can to the bearer.
Thank you in advance.

Please note:

This questionnaire is to be completed by ICT Consultants.

Section A

Organization

Which year was your organization established?

.....

1. a) Approximately, how many people are employed in your organization?

.....

b) How many of these employees are in the area of Information systems development and implementation?

2. a) How would you classify your organization with regard to ownership?

Locally owned

☐

Foreign owned

☐

Both (Local and Foreign owned)

☐

b). What business does your organization deal with? (Tick whichever applies, you can tick more than once).

Hardware ☐ Software ☐

Level of importance attached to user involvement

IS Services ☐ Any other (Please specify) ☐

Rate the level of importance to which you attach to the user involvement at various stages of Systems development life cycle (SDLC) as below. Use the following scale.

Personal

Which gender are you?

Male ☐

Female ☐

5. In which age bracket are you?

20 or less ☐ 21-25 ☐ 26-30 ☐ 31-35 ☐

36-40 ☐ 41-45 ☐ 46-50 ☐ 51-55 ☐

56-60 ☐ Over 60 ☐

6. How many years have you worked as an ICT Consultant?

.....

7. How would you describe your MAIN job role? - Tick one box only

Computer System Designer and Developer ☐

System Analyst ☐

Other (Please Specify)

Section B

Level of importance attached to user involvement

8. Rate the level of importance to which you attach to the user involvement at various stages of Systems development life cycle (SDLC) as below. Use the following scale.

- 1. Not important at all
- 2. Unimportant
- 3. Neither important nor unimportant
- 4. Important
- 5. Extremely important

	1	2	3	4	5
1. During system investigations	☐	☐	☐	☐	☐
2. System conceptualization	☐	☐	☐	☐	☐
3. System requirements Analysis	☐	☐	☐	☐	☐
4. System Formulation and inception	☐	☐	☐	☐	☐
5. Specification of requirements	☐	☐	☐	☐	☐
6. Design of the system	☐	☐	☐	☐	☐
7. Development (programming)	☐	☐	☐	☐	☐
8. Coding of software	☐	☐	☐	☐	☐
9. Implementation (rollout) stage	☐	☐	☐	☐	☐
10. Testing	☐	☐	☐	☐	☐
11. Maintenance Stage	☐	☐	☐	☐	☐
12. Planning the installation	☐	☐	☐	☐	☐
13.Planning conversion	☐	☐	☐	☐	☐

Section C

	1	2	3	4	5
14. Scheduling conversion	☐	☐	☐	☐	☐
15. Scheduling Installation	☐	☐	☐	☐	☐
16. Actual conversion	☐	☐	☐	☐	☐
17. Actual Installation	☐	☐	☐	☐	☐
18. Scheduling training sessions	☐	☐	☐	☐	☐
19. Evaluating its performance.	☐	☐	☐	☐	☐
20. Any other relevant stages					
specify and respond appropriately	☐	☐	☐	☐	☐
.....	☐	☐	☐	☐	☐
.....	☐	☐	☐	☐	☐

5. Extensively

	1	2	3	4	5
1. During system investigations	☐	☐	☐	☐	☐
2. System conceptualization	☐	☐	☐	☐	☐
3. System requirements Analysis	☐	☐	☐	☐	☐
4. System Formulation and inception	☐	☐	☐	☐	☐
5. Specification of requirements	☐	☐	☐	☐	☐
6. Design of the system	☐	☐	☐	☐	☐
7. Development (programming)	☐	☐	☐	☐	☐
8. Coding of software	☐	☐	☐	☐	☐
9. Implementation (rollout) stage	☐	☐	☐	☐	☐
10. Testing	☐	☐	☐	☐	☐
11. Maintenance Stage	☐	☐	☐	☐	☐

Section C

Extent of Involvement

INSTRUCTIONS: The purpose of the following questions is to measure the extent of users' involvement in Information Systems (IS) Projects, Systems development life cycle (SDLC) of a new computer-based information system according to how **YOU** perceive

9. To what degree **DO YOU (in practice)** involve the end-users in the various SDLC stages and activities? Use the scale below.

- 1. Not at all
- 2. Very little
- 3. Moderately
- 4. Quite a lot

5. Extensively	1	2	3	4	5
1. During system investigations	☐	☐	☐	☐	☐
2. System conceptualization	☐	☐	☐	☐	☐
3. System requirements Analysis	☐	☐	☐	☐	☐
4. System Formulation and inception	☐	☐	☐	☐	☐
5. Specification of requirements	☐	☐	☐	☐	☐
6. Design of the system	☐	☐	☐	☐	☐
7. Development (programming)	☐	☐	☐	☐	☐
8. Coding of software	☐	☐	☐	☐	☐
9. Implementation (rollout) stage	☐	☐	☐	☐	☐
10. Testing	☐	☐	☐	☐	☐
11. Maintenance Stage	☐	☐	☐	☐	☐

Section D

	1	2	3	4	5
12. Planning the installation	☐	☐	☐	☐	☐
13.Planning conversion	☐	☐	☐	☐	☐
14. Scheduling conversion	☐	☐	☐	☐	☐
15.Scheduliing Installation	☐	☐	☐	☐	☐
16. Actual conversion	☐	☐	☐	☐	☐
17. Actual Installation	☐	☐	☐	☐	☐
18. Scheduling training sessions	☐	☐	☐	☐	☐
19. Evaluating its performance.	☐	☐	☐	☐	☐
20. Any other relevant stages					
specify and respond appropriately	☐	☐	☐	☐	☐
Extensively	☐	☐	☐	☐	☐
During system investigations	☐	☐	☐	☐	☐
System conceptualization	☐	☐	☐	☐	☐
System requirements Analysis	☐	☐	☐	☐	☐
System Formulation and inception	☐	☐	☐	☐	☐
Specification of requirements	☐	☐	☐	☐	☐
Design of the system	☐	☐	☐	☐	☐
Development (programming)	☐	☐	☐	☐	☐
Coding of software	☐	☐	☐	☐	☐
Implementation (rollout) stage	☐	☐	☐	☐	☐
Testing	☐	☐	☐	☐	☐
Maintenance Stage	☐	☐	☐	☐	☐

Section D

Expected Extent of Involvement

INSTRUCTIONS: The purpose of the following questions is to measure the expected extent of users' involvement in Information system (IS) Projects Systems development life cycle (SDLC) of a new computer-based information system according to how **IT SHOULD BE DONE.**

10. To what degree **SHOULD YOU** involve the end-users in the various SDLC stages and activities? Use the scale below.

- 1. Not at all
- 2. Very little
- 3. Moderately
- 4. Quite a lot
- 5. Extensively

	1	2	3	4	5
1. During system investigations	☐	☐	☐	☐	☐
2. System conceptualization	☐	☐	☐	☐	☐
3. System requirements Analysis	☐	☐	☐	☐	☐
4. System Formulation and inception	☐	☐	☐	☐	☐
5. Specification of requirements	☐	☐	☐	☐	☐
6. Design of the system	☐	☐	☐	☐	☐
7. Development (programming)	☐	☐	☐	☐	☐
8. Coding of software	☐	☐	☐	☐	☐
9. Implementation (rollout) stage	☐	☐	☐	☐	☐
10. Testing	☐	☐	☐	☐	☐
11. Maintenance Stage	☐	☐	☐	☐	☐

Section E

11.Challenges of involving users in systems development

Indicate (by ticking) to what degree you agree/disagree with having been

12. Planning the installation

13.Planning conversion

14. Scheduling conversion

15.Scheduliing Installation

16. Actual conversion

17. Actual Installation

18. Scheduling training sessions

19. Evaluating its performance.

20. Any other relevant stages

specify and respond appropriately

.....

.....

Users' resistance

Lack of system ownership

Conflicts of interest

No Knowledge about the system

Creation of unnecessary features

Users Disinterest

Project delay

Disrupts project success

Lack of experience

Others, specify

.....

.....

You have now completed the questionnaire. Please hand it over to the bearer as soon as you can. Once again thank you for your help

Section E

11.Challenges of involving users in systems development

Indicate (by ticking) to what degree you agree/disagree with having been faced with the following challenges in Information Systems projects Development **YOU HAVE** undertaken in Kenya.

	Strongly Agree	Agree	Neither Agree Nor Disagree (Neutral)	Disagree	Strongly Disagree
Costs constraint	☐	☐	☐	☐	☐
Company policy	☐	☐	☐	☐	☐
Ignorance of user needs	☐	☐	☐	☐	☐
Inflexible systems	☐	☐	☐	☐	☐
“Play down” on impact	☐	☐	☐	☐	☐
Incompetent IT staff	☐	☐	☐	☐	☐
Marketing and sales issues	☐	☐	☐	☐	☐
Company politics	☐	☐	☐	☐	☐
Time limitation	☐	☐	☐	☐	☐
Bureaucracy constraints	☐	☐	☐	☐	☐
Unrealistic expectations	☐	☐	☐	☐	☐
Poor Coordination	☐	☐	☐	☐	☐
Users' resistance	☐	☐	☐	☐	☐
Lack of system ownership	☐	☐	☐	☐	☐
Conflicts of interest	☐	☐	☐	☐	☐
No Knowledge about the system	☐	☐	☐	☐	☐
Creation of unimportant features	☐	☐	☐	☐	☐
Users Disinterest	☐	☐	☐	☐	☐
Project delay	☐	☐	☐	☐	☐
Diminishes project success	☐	☐	☐	☐	☐
Lack of experience	☐	☐	☐	☐	☐
Others, specify	☐	☐	☐	☐	☐
-----	☐	☐	☐	☐	☐
-----	☐	☐	☐	☐	☐

You have now completed the questionnaire. Please had it over to the bearer as soon as you can. Once again thank you for your help

Appendix III: List of ICT Consultancy Firms on the Survey

- 1 Africaland computers Kenya ltd
- 2 Aftron Computer Systems
- 3 Akili Africa Ltd
- 4 Amarco (Kenya) Ltd
- 5 Ascent technologies and Business Ltd
- 6 Automated Business Systems
- 7 Blue Chip Technologies Ltd
- 8 Blue Chip 2000 systems Ltd
- 9 Bytech Engineering Ltd
- 10 Compaq East Africa Representative Office
- 11 Comp-Rite Kenya Ltd
- 12 Compucare
- 13 Compulynx Ltd
- 14 Compustat Technologies
- 15 Computech Ltd
- 16 Computer City
- 17 Computer Point (K) Ltd
- 18 Computer Technics Ltd
- 19 Computron systems (K) Ltd
- 20 Comtech Systems Ltd
- 21 Copy Cat Ltd
- 22 Dee Dee Computers Plus
- 23 Digital Africa Services Ltd
- 24 Donn Consultants Ltd
- 25 First Computers Ltd
- 26 FootMan Walker LTD
- 27 Future Logic Ltd
- 28 HP East Africa
- 29 ICL Kenya Ltd
- 30 ICN - Toshiba Ltd
- 31 Infortech Computer Systems
- 32 Inight Technologies Ltd
- 33 Kenafro computers ltd
- 34 Kenya Microcomputers Ltd
- 35 Kingsway Business Systems
- 36 Legend Technologies (EPZ) Ltd
- 37 Limpo Business Systems Ltd
- 38 Matrix Group
- 39 Mauzito Consultants
- 40 Metropolitan Technologies Ltd
- 41 Micro Kenya Ltd
- 42 Microflex Kenya Ltd
- 43 Microlan Kenya Ltd
- 44 Millennium Automation Ltd
- 45 Mitsumi Computer Garage Ltd
- 46 M-M Computers
- 47 Modern business communications Ltd
- 48 Multi Options Ltd
- 49 NCR (KENYA) Ltd
- 50 Next Technologies
- 51 Norkun Intakes Ltd
- 52 OEL sysnet Ltd
- 53 Personal Computer World Ltd
- 54 PCTech Systems Ltd
- 55 Pentium Technologies
- 56 Peripherals Technologies Ltd
- 57 Personal Computer World Ltd
- 58 Personal Systems Ltd
- 59 Pinnacle Relational Database Systems
- 60 Premier Software Ltd
- 61 Prodata Computers Ltd
- 62 Professional Computer Consultants Ltd
- 63 Protec Data systems Ltd
- 64 Sai Informatics Ltd
- 65 Sai Office Supplies Ltd
- 66 Silicon Communication Solutions
- 67 Simple Computers
- 68 Startup Suppliers Ltd
- 69 Surfnet Communication Systems
- 70 Software Applications Ltd
- 71 Symphony
- 72 Telerosa Computer Services
- 73 Trans Business Machines Ltd
- 74 Ticentric Computers
- 75 Tronic World Ltd
- 76 Unitek Computer Services Ltd
- 77 Violet Computers Ltd
- 78 Virtual Computers Ltd
- 79 Vision Technologies
- 80 Voice and Data Systems
- 81 Web Engineering Limited
- 82 Winksoft Technologies
- 83 Zodiac Systems ltd.