

# **User Participation During The Implementation Of Software Packages**

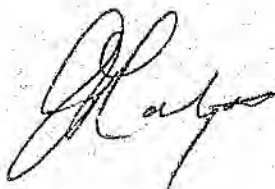
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A research report submitted to the Faculty of Commerce,  
University of the Witwatersrand, Johannesburg, in partial  
fulfilment of the requirements for the degree of Master of  
Commerce.

Johannesburg, November 1996

## **Declaration**

I declare that this research report is my own unaided work. It is being submitted for the Degree of Master of Commerce (by course work) in the University of the Witwatersrand, Johannesburg. This work has not been submitted for any degree or examination in any other University.



**Jean-Pierre Coetzee**

Signed on the 29<sup>th</sup> day of NOVEMBER 1996.

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## Abstract

User participation is widely regarded as being important in the development of systems. Research has largely focused on describing participation in the context of traditional systems environments, such as transaction processing, management information and decision support. Very little research has concentrated on the implementation of software packages. The implementation of packaged software, as an alternative to traditional software development, has become increasingly popular and further research into this specific area could provide valuable insights into the user participation construct.

The aim of this research is to determine the nature of user participation during package implementations by examining user participation from three different perspectives: the activities that users perform during the systems development lifecycle (SDLC), whether the activity can be related to the level of the user and the factors which affect participation positively and negatively.

A limited sample comprising two organisations was selected. The organisations were small to medium size with a turnover not exceeding R 5 000 000 per annum. Twelve respondents were drawn from the organisations. The respondents included senior executives, middle managers and end-users. The results of the interviews were analysed using content and interpretative analysis.

The main findings of the research are as follows:

- a) User participation contains three dimensions. A responsibility element and two activity based dimensions. The responsibility element is critical to effective participation as it implies that a user manages the project and is responsible for the success of the project. The activity dimensions consist of the approval, review and sign-off of tasks and the execution of hands-on activities;
- b) User participation activities can be categorised as strategic, tactical or control, and operational. The high-level activities were mapped to the different levels of users, using the Anthony triangle;

- c) The research proved conclusively that user, organisational and project factors influence user participation, both positively and negatively,
- d) The research has provided mixed results on the link between user participation and system success. User participation is a key factor leading to system success, but the existence of a number of other factors in the system implementation process prevents the drawing of a conclusion that user participation will lead to a successful implementation.

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## Chapter 1: The Research Question

### 1.1 Introduction To The Research Topic

User participation in the development of Information Systems (IS) has long been considered critical to the successful implementation of IS (Swanson, 1974; Kappelman and Mclean, 1991; Ives and Olson, 1984; Franz and Robey, 1986; Robey and Farrow, 1982). Since the mid Sixties, extensive research has been conducted on the participation and involvement of users in the systems development process (Ginzberg, 1981; Ives and Olson, 1984; Baroudi, Olson and Ives, 1986; Barki and Hartwick, 1989; Barki and Hartwick, [a], 1994; King and Lee, 1986; Doll and Torkzadeh, 1990). These studies have investigated the different factors affecting participation (Hirschheim, 1985; Doll, 1987; Jarvenpaa and Ives, 1991; Tait and Vessey, 1988), the process has been discussed in detail (Bostrom, 1989; Newman and Robey, 1992; Cavaye, 1995) and numerous dimensions of participation have been identified (Barki and Hartwick, [b], 1994; Baroudi et al, 1986; Olson and Ives, 1984; Franz and Robey, 1986). Researchers have been convinced of the influence of participation on key criteria such as systems quality (Robey and Farrow, 1982), user satisfaction (Ives and Olson, 1984) and systems use (Franz and Robey, 1986), which are surrogate measures for systems success. Notwithstanding the large number of studies on the subject, the positive effect of participation on systems success has not been consistently proved (Ives and Olson, 1984; Baroudi et al, 1986; Doll and Torkzadeh, 1989; Franz and Robey, 1986). Research has

*"failed to clearly demonstrate the benefits of user participation and involvement"* (Barki and Hartwick, [a], 1994).

Some IS projects may be unsuccessful regardless of user participation, while there are also projects which are successful where users have not participated (McKeen, Giumareas and Wetherbe, 1994). The link between user participation and system success is

*"considerably more complicated than the direct, bivariate relationship traditionally assumed"* (Cavaye, 1995).

## 1.2 The Problem

Although user participation is widely regarded as being important in the development of systems (Swanson, 1974; Kappelman and Mclean, 1991; Ives and Olson, 1984; Franz and Robey, 1986; Robey and Farrow, 1982), research has focused on describing participation in the context of traditional data processing environments (Doll and Torkzadeh, 1989; Ives and Olson, 1984; Franz and Robey, 1986; Baroudi et al, 1986), in Management Information Systems (King and Lee, 1986) and Decisions Support Systems (Alavi and Joachimsthaler, 1992), but has not concentrated on specific non-traditional development environments.

*"Most studies discuss user participation in the context of a traditional data processing environment. Very few studies concentrate on other types of systems" (Cavaye, 1995).*

Examples of these non-traditional environments are user-led development (Lawrence and Low, 1993), end-user computing (Doll and Torkzadeh, 1989; Rivard and Huff, 1988), rapid application development (Dean, Dvorak and Holen, 1994) and the implementation of software packages (Cale and Eriksen, 1994). The implementation of packaged software, as an alternative to traditional software development, has become increasingly popular (Lippert, 1996; Cale and Eriksen, 1994; Launi, 1994). Lippert (1996), in a survey of 65 IT organisations in South Africa, found that

*"72% of the respondents believed that software packages provided the most efficient solution to their business problems."*

The literature review will show that research of user participation during the implementation of packages is limited. Cale and Eriksen (1994) state that a

*"paucity of published research directed specifically at the implementation of existing software packages"*

exists. Further research into this specific area would provide valuable insights into the user participation construct (Barki and Hartwick, [a], 1994; Cavaye, 1995). This research proposes to

identify the nature of user participation during the implementation of packaged software by interviewing a cross section of users from a sample of organisations, who have implemented software packages.

### **1.3 Importance Of The Research**

This research attempts to address the gap that exists in the knowledge of user participation during the implementation of software packages. To achieve this, the research aims to determine the nature of user participation during package implementations, what activities the user performs, where during the Systems Development Lifecycle (SDLC) these activities are executed, the factors which affect participation and whether any activities contribute to the successful implementation of the package. If this is possible, then the research will provide practical guidelines to aid managers to improve the participation of users during the implementation of packages.

### **1.4 Research Objectives**

The research objectives were to:

- a) Identify user participation activities during the implementation of software packages;
- b) Explore whether the participation activities can be categorised into strategic, tactical and operational elements using the Anthony triangle;
- c) Map these activities to the SDLC to establish when these activities take place in the development lifecycle of a software package;
- d) Inquire which factors affect participation by users during such implementations;
- e) Broadly establish if user participation contributes to implementation success;

- f) Define a set of guidelines to assist managers to improve user participation during the implementation of software packages.

## **1.5 Limitations And Key Assumptions**

The research surveyed a limited sample of organisations based in South Africa. These organisations had a turnover of less than R 5 000 000. White (1995) has established a link between the size of an organisation and the success of integrating new technologies. As new technologies include the implementation of systems, it is expected that small organisations are likely to be more successful in implementing systems than large organisations. For this reason small organisations were selected for the research. The sample selected was not industry specific, in order to gather evidence which would be applicable across different environments. A semi-structured interview was used as the research instrument to gather evidence of a qualitative nature. A broad spectrum of users were interviewed in each organisation. No statistical data was collected.

## **1.6 Structure Of The Report**

The report is structured as follows:

Chapter 1 introduces the research topic, describes the research objectives and declares the limitations and key assumptions of the research method.

Chapter 2 reviews the literature and establishes that user participation during the implementation of software packages is not well researched. A number of terms and concepts are defined to provide clarity. A model of user participation is put forward and the different components of the model are discussed. These components are participation attributes and factors, the process itself, the success relationship and intervening mechanisms which moderate the affect of participation on success. A number of participation measures are elaborated on, highlighting the key participation attributes.

Chapter 3 states the underlying theory and the research propositions.

Chapter 4 discusses the research method and the use and limitations of this method. The interview schedule is shown. (Appendices A details an example of an interview transcript and Appendix B shows the SDLC model presented to the interviewees).

Chapter 5 presents the results of the semi-structured interviews. The results were analysed using interpretative and content analysis.

Chapter 6 interprets the results. Common themes are identified, support for the generalisations are recognised, revisions to the propositions are pinpointed and unexpected findings are noted.

Chapter 7 discusses whether the research objectives were met, defines some guidelines to South African managers, and offers suggestions for further research.

## **Chapter 2: Review Of The Related Literature**

### **2.1 Structure of the Review**

The literature review is structured as follows:

Section 2.2 defines the terminology used in the title of this research, namely "user", "user participation", "implementation" and "software packages". The definition of terminology provides a common interpretation used during the remainder of the report.

Section 2.3 introduces a model of user participation and discusses the components of this model. These components are contingencies, the user participation process, the link between user participation and system success and mechanisms which improve or impair this success link.

Section 2.4 discusses the critical attributes of participation.

Section 2.5 explores the key measures of user participation which have been developed since the mid-Eighties.

Section 2.6 provides a summary of the major themes identified in the literature.

### **2.2 Definition Of Terminology**

User participation is a concept that has been discussed for about three decades, but the term participation has often been used interchangeably with user involvement, causing much confusion among researchers and IS practitioners (Barki and Hartwick, [a], 1994). Even the term "user" is open to different interpretations (Cavaye, 1995). It is therefore prudent to clearly define and explain the terms and concepts which are referred to in this research report, namely "user", "user participation", "SDLC" and "software packages". These definitions will provide a common reference which applies to this research report.

### 2.2.1 Users

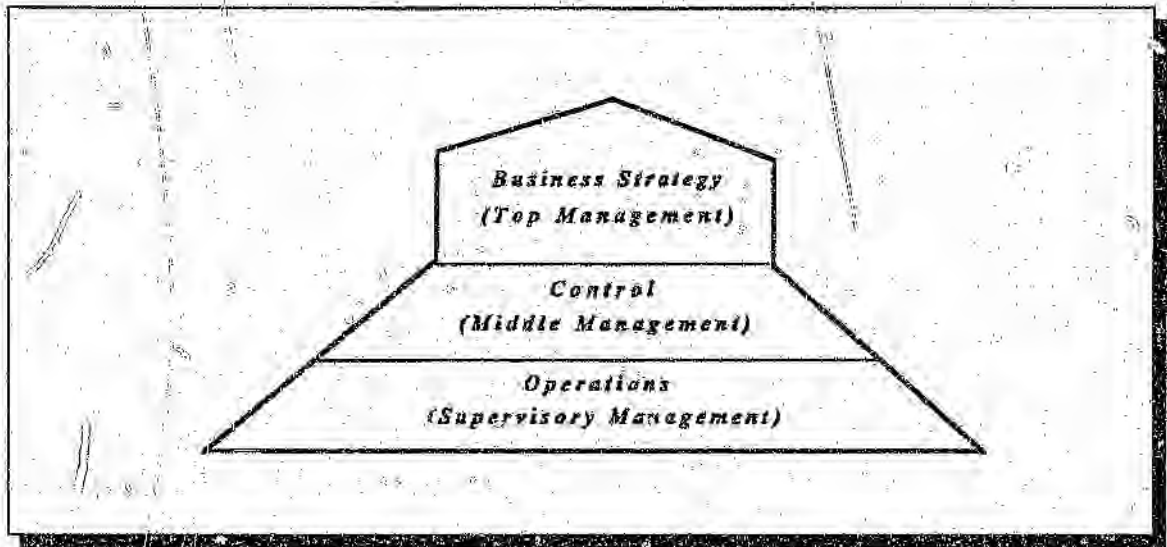
The term "user" is very broad and covers a number of different types of users, ranging from senior management to the clerk (Cavaye, 1995). The different types of users can be related back to the Anthony triangle which usually portrays the IS department with the divisions of top, middle and supervisory management (Remenyi, 1992). Edwards, Ward and Bytheway (1992) define "users" as

*"those who want to have the benefit of the use of the completed system. They must be satisfied at the earliest possible stage that the system will deliver the expected benefits and must see evidence of progress."*

Users can also be classified according to their use of information or outputs provided by the system (Cavaye, 1995), and to the nature and type of the decisions they are required to make with this information (Edwards, Ward and Bytheway, 1992). Senior managers use the outputs of a system to make strategic decisions regarding the profitability and investments of an organisation. Middle managers manage the work affected by the system and use information for tactical or management control decisions. Operational employees apply the system outputs to facilitate the operations of the organisation.

The research will explore whether user participation activities can be categorised as strategic, control and operational, using the Anthony triangle as a framework.

**Figure 1: The Anthony Triangle**



*Source: Remenyi, Money and Twite (1992)*

### **2.2.2 User Participation and Involvement**

In IS, the terms user participation and user involvement have frequently been used to mean the same thing (Barki and Hartwick, 1989; Olson and Ives, 1984). Barki and Hartwick (1989) claim that the concepts of user participation and involvement are distinct and must be defined separately. In IS, involvement has generally meant the activities or behaviours of users during the systems development process (Baroudi et al, 1986; Doll and Torkzadeh, 1990; Farrow and Robey, 1986). In other disciplines, such as psychology, marketing and organisational behaviour, involvement describes a subjective psychological state reflecting importance and personal relevance of an issue (Barki and Hartwick, 1989; Barki and Hartwick, [a], 1994). To align work in IS with that of other disciplines, Barki and Hartwick (1989) recommended that user participation should be used to refer to the

*"assignments, activities or behaviours that users or their representatives perform during the systems development process."*

Involvement, on the other hand, would indicate a subjective psychological state reflecting the importance and personal relevance that a user attaches to a given system (Barki and Hartwick, 1989). The distinction between the two terms is important as the confusion between the meaning of participation and involvement has caused inconsistent results in participation research (Ives and Olson, 1984; Baroudi et al, 1986; Cavaye, 1995). Since Barki and Hartwick (1989) clarified the use of the terms, several studies have followed their definition (Kappelman and Mclean, 1991; Kim and Lee, 1991). The definition is chosen because it brings IS research in line with other disciplines. The distinction is material as this research will focus on participation and not involvement. User involvement is a complex concept which demands separate research.

### **2.2.3 The Systems Development Lifecycle**

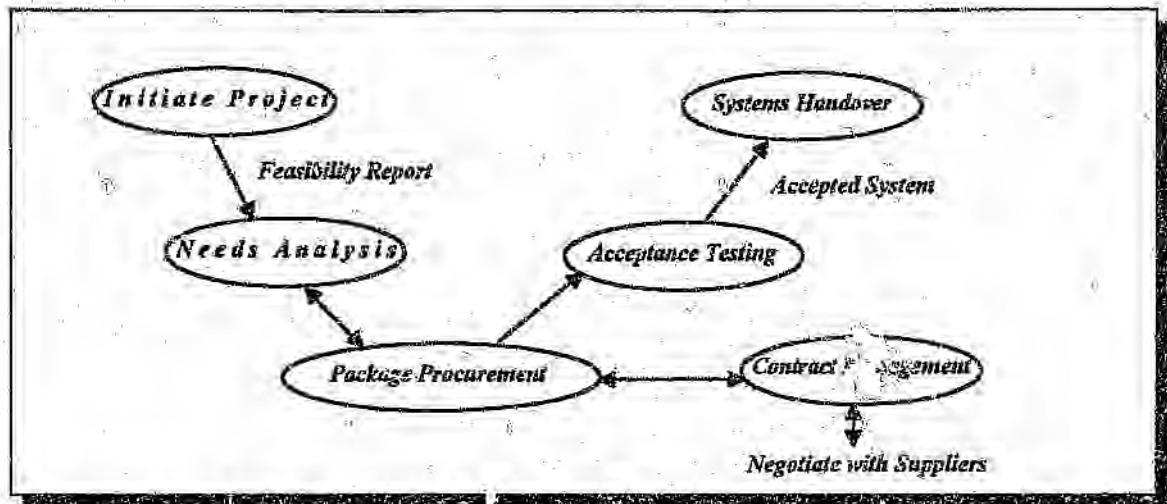
The SDLC is a view of the software development process which suggest that there are a number of discrete steps in the creation and use of a computer system (Remenyi, 1992). The SDLC as a process was defined during the Seventies. The description of the lifecycle has significantly improved the development process by reducing complexity and making the process easier to measure (Boehm, 1988). Barry Boehm (1976) illustrated the steps of the classical development lifecycle in the "Waterfall" diagram. These steps were system and software requirements, preliminary and detailed design, code and debug, test, preparations and operations management. Enger (1981) enhanced the classical approach by incorporating structured design (Jackson, 1976), analysis and programming (De Marco, 1978) techniques. This became known as the "structured" SDLC. The lifecycle phases in the structured model are similar to the classical lifecycle but are termed requirements analysis, logical, physical and program design, systems implementation and operations. Edwards, Ward and Bytheway (1992) propose a modern view of system development by using the V-model to identify the various stages and the associated deliverables produced. The phases of the V-model are as follows:

- a) Initiate;
- b) Needs Analysis;
- c) Technical Design;

- d) Systems Build;
- e) Integration Testing;
- f) Acceptance Testing;
- g) System Handover.

The V-model is a useful starting point for systems development and can be modified to show the different approaches to application development such as prototyping and other variations to the theme, e.g. package implementations (Edwards, Ward and Bytheway, 1992). Launi (1991) suggests the need for a multi-phased methodology for the implementation of packages. In the case of package implementation, the technical design, system build and integration testing is undertaken by the vendor and replaced in the lifecycle by a phase termed "package procurement". This phase includes the additional activities of acquiring, installing and customising the package and managing the contractual relationship between client and vendor (Duffy and Asad, 1980; Edwards, Ward and Bytheway, 1992; Launi, 1991). This adapted V-model is shown in Figure 2. Individual authors identify different lifecycle stages and name these differently, but all describe essentially the same process. Understanding the SDLC for a package implementation is important as user participation research has often used a stage definition against which to map user activities (Ginzberg, 1980; Baroudi et al, 1986; Olson and Ives, 1984; Barki and Hartwick 1989; Barki and Hartwick, [b], 1994). This research will use the SDLC model, shown in Appendix B, as a framework within which to organise user participation activities.

**Figure 2: The V-Model**



*Source: Edwards, Bytheway and Ward (1992)*

#### **2.2.4 Packaged Software**

A modern tendency prevails whereby organisations purchase software packages which are implemented by third-party software vendors (Donald, 1992; Lippert, 1996). Parry (1990) defines a software package as

*"a standard solution to a business problem and a frame within which a solution can be obtained or developed."*

Package implementations are becoming increasingly popular because these systems are implemented far more quickly and at a lower cost (Simmons, 1986) to allow organisations to react to rapidly changing business circumstances (Lippert, 1996). With packaged software solutions, the application contains a large part of the functionality required by the business and the business processes can be adapted to the package (Brewster, 1995). This negates the need to design and code a solution in-house which has already been developed by a vendor as a standard application. The vendor completes the detailed design and programming phase, using skilled and costly analysis and programming resources (Edwards, Blake and Bytheway, 1992). Outsourcing

the software development by implementing a package is beneficial for a business to reduce costs and risk (Goldsmith, 1985). Launi (1991) support this view by stating that

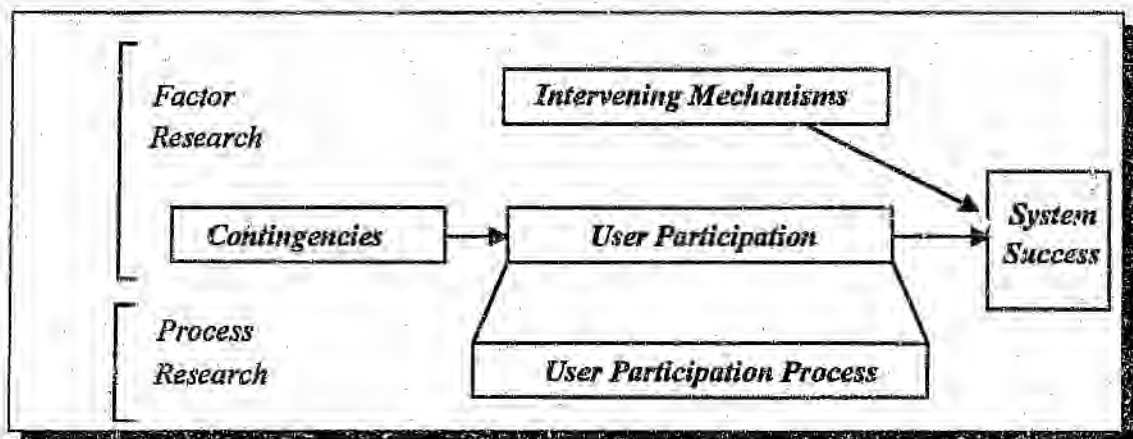
*"package software is usually less expensive to acquire and implement and can meet the needs of and organisation requiring sophisticated applications."*

This research will concentrate on the implementation of software packages, as opposed to the development and implementation of custom software by IS departments.

### 2.3 A Descriptive Model of User Participation

Newman and Robey (1992) developed a model depicting the traditional participation - success link. Cavaye (1995) enhanced this model by adding the factor and process components. This model is depicted in Figure 3.

**Figure 3: A Model of User Participation**



*Source: Cavaye (1995)*

*Contingencies* are factors which encourage or hinder participation in the context of system development. The *process* refers primarily to the interaction between users and the system builders or analysts. The dynamics of this relationship affect the extent and effectiveness of the process. User participation affects system success. However, a system development where users participate does not necessarily translate into a successful development. *Intervening mechanisms*

are factors which moderate the effect of participation on the success of the development. Cavaye (1995) states that the model recognises the potential effect of participation contingencies on the process, acknowledges the dynamics of the process and the fact that intervening variables may moderate the effect of participation on system success. The model provides a framework to better describe user participation in systems development. The different components of the model are analysed in more detail in subsequent paragraphs.

### **2.3.1 Contingencies**

Contingencies refer to factors which facilitate user participation. Cavaye (1995), in a review of user participation research since the mid-Eighties, classified three types of contingencies. They are:

- a) User factors;
- b) Organisational variables;
- c) Project-related factors.

#### **2.3.1.1 User Factors**

Users are encouraged to participate if they believe their efforts are likely to lead to a system which suits their needs (Norton and McFarlane, 1975; Robey and Farrow, 1982). The system must be perceived to be important by improving the way the user performs his job activities (Cale and Eriksen, 1994). Often users are unable to participate in a meaningful way because they lack knowledge of their tasks. Effective communications between user and analyst can bridge this gap by encouraging learning, exchanging and transferral of knowledge (Bostrom, 1984; De Brabander and Thiers, 1984). The initiation of a system development by users can encourage participation (King and Lee, 1986) and can generate commitment to the system (Markus and Kiel, 1993), leading to improved user understanding. Participation may also lead to increased user acceptance by developing realistic expectations about system capabilities and providing a forum for conflict resolution (Keen, 1981).

### **2.3.1.2 Organisational Factors**

According to Tait and Vessey (1988), the time available to develop a system is important. User participation can extend the time needed to develop and make a system operational. If development is constrained by time, less participation is desirable (Hirscheim, 1985). Locke and Schweiger (1979) pointed out that the more users participate, the more financial resources are required as time to develop increases. A lack of financial resources therefore also inhibits user participation. If resources are not limited, participation is facilitated (Doll, 1987). Kim and Lee (1986) concluded that top management commitment to a system development is important. This commitment need not be active, but support for the development is essential to enable and encourage participation (Doll, 1985). If users believe that top managers are supportive of an IS development, they will be inclined to participate more (Jarvenpaa and Ives, 1991).

### **2.3.1.3 Project Factors**

A project which is technically complex or affects many functions, necessitates more participation from users (Tait and Vessey, 1988; Ginzberg, 1980). Similarly, large systems require more participation than smaller systems (Schonberger, 1980). If the technology is easy to use, this will promote user participation. This may lead to user-led developments of applications because the technology available does not require specific technical skills (Joshi, 1991). Schonberger (1980) proposed that structured tasks at an operational level require little participation, while unstructured tasks at a strategic level require considerably more. New systems bring about change in organisations. Jobs, relationships, responsibilities and organisation structures can change. Joshi (1991) says that

*"system implementation is a change process and system designers change agents."*

User participation is essential to manage change, avoid resistance and gain commitment (Joshi, 1991; Lucas, 1974; Markus, 1983).

## **2.3.2 The Participation Process**

User participation is a social process of user - IS specialist relationships which affect project outcomes (Newman and Robey, 1992). The process takes place over time and involves interaction between the users and developers (Cavaye, 1995). The participation itself cannot guarantee an effective contribution to the final outcome of a project. The effectiveness of participation depends on the relationship between the user and the analyst. The ability of the user and analyst to exert influence, use their power positions and communicate with each other will affect the effectiveness of participation (Markus and Bjorn Anderson, 1987). Effective user - IS specialist communications allow for meaningful participation by closing the learning gap (Bostrom, 1989), creating mutual understanding and encouraging agreement (DeBrabander and Thiers, 1984). Markus (1983) points out that the user - IS specialist relationship is unlikely to remain stable over time. Newman and Robey (1992) support this observation by indicating that

*"critical encounters may change the nature of relative user - specialist influence and thus may change the trajectory of a project."*

The development of systems requires many interactions between people. This process is characterised by conflict and changes in the influences of the parties. Because of the dynamism of this process, the effectiveness of the participation cannot be guaranteed. The outcome of the venture is thus affected by the quality and nature of the user - specialist interaction (Cavaye, 1995; Newman and Robey, 1992).

One of the keys to successful implementation is a close working relationship between system developer and end-user (Cale and Eriksen, 1994; Ives and Olson, 1984; Ginzberg, 1980). However, with the increased use of package software, the end-user has little or no contact with analysts and designers (Cale and Eriksen, 1994). Cale and Eriksen (1994) believe that the understanding of how to manage the implementation of package applications is open to question. A successful implementation of package software is dependent upon the fit between the application and the user requirements (Lippert, 1996). Cale and Eriksen (1994) are of the opinion that mandated implementations, without the support of users, have little chance of success. This statement is supported by Lyytinen and Hirschheim (1987), who identified the inability of an IS project to meet the requirements and expectations of users and other stakeholders as a reason for

project failure. Project abandonment can also take place, even if users actively participate, due to the incapacity to solve organisational and political issues (Mensah and Przasnyski, 1991). The application should increase the effectiveness and efficiency of the user, support the business processes and not be overly complex (Cale and Eriksen, 1994). This requires an in-depth understanding by the users. Edwards (1993) states that users

*"are rapidly acquiring more technical sophistication, more control over their systems, and correspondingly need to know how their systems work."*

Cale and Eriksen (1994) believe that this understanding is very similar to the knowledge sought in the systems analysis phase of the traditional life cycle. This implies that user participation is also of critical importance during the implementation of package applications and that the

*"ISD can no longer expect to have a one sided relationship with the users, controlled by the ISD"* (Lippert, 1996).

### **2.3.3 Intervening Mechanisms**

Users may have participated and the process may have been effective, but the outcome need not be successful. The standard model of user participation implies a causal relationship between user participation and system success, although research has not proved this link conclusively (Olson and Ives, 1984; Cavaye, 1995). The participation - success relationship is affected by moderating variables. These variables affect the outcomes of the user participation process and can lead to less successful outcomes. They relate to motivational and cognitive factors (McKeen, Guimaraes and Wetherbe, 1994; Olson and Ives, 1984; Cavaye, 1995). Implementation of new systems affects the sense of control of users over their work. Baronas and Louis (1988) propose that user participation during implementation restores a sense of control, allowing users to accept the system easier. They conclude that enhancing or restoring the control of users over the development process may have a significant effect on satisfaction.

The difference between a users' actual and desired level of participation may affect his satisfaction. Doll and Torkzadeh (1989), testing this discrepancy theory, discovered that users who are more

or less involved than they desire, are less satisfied with the outcome of system development. King and Lee (1991) determine that satisfaction is likely to be higher if the desire to participate is closely matched with actual participation, rather than purely ensuring high participation.

#### **2.3.4 The User Participation - Success Relationship**

The model of user participation implies a causal relationship between user participation and systems success. While the literature proclaims that user participation in development has a positive effect on successful implementations (Swanson, 1974; Olson and Ives, 1981; Franz and Robey, 1986; Robey and Farrow, 1982), empirical research provides inconsistent results. Ives and Olsen (1984) in a review of twenty two studies on the influence of user participation on systems success report mixed results. Of the twenty two studies, eight found a positive relationship between user participation and system success, seven produced mixed results and the remaining seven produced negative results. This inconsistency is caused by a number of factors, which are briefly mentioned below.

- a) **Research method** - Surveys are the normal research strategy used in studies of user participation (Olson and Ives, 1984). This quantitative research method allows large amounts of data to be captured but is limiting in attempting to uncover and explore relationships. The use of qualitative methods or case research is more appropriate to uncover these relationships (Cavaye, 1995; Tait and Vessey, 1988). Qualitative research may lead to a deeper understanding of the process and intervening mechanisms;
- b) **Scope of Research** - Participation is consistently measured by user activities during various phases of development (Baroudi et al, 1984; Doll and Torkzadeh, 1988; Kim and Lee, 1986). Sometimes the influence of the user during development is also measured. More emphasis can be placed on describing the other dimensions of participation such as type, degree, content, formality and influence to obtain a better operational view of participation (Barki and Hartwick, [a], 1994);

- c) **Re-use of Instruments** - Researchers have used a number of different instruments with which to measure participation. Very seldom has the same instrument been used twice. Straub (1989) contends that instrument validation is inadequate and that this has hampered research efforts. King and Lee (1991) used the same instrument as developed by Doll and Torkzadeh (1990). The recently developed instrument by Barki and Hartwick ([b], 1994) is, in the view of Cavaye (1995) the most comprehensive to date;
- d) **System Development Context** - Most studies discuss user participation in the context of traditional data processing environments of transaction processing and management information systems (Ives and Olsen, 1984; Cavaye, 1995). Further research can profitably be carried out in the development of particular systems and environments (Cavaye, 1995). Different environments could create different contexts for user participation (Barki and Hartwick, [b], 1994).

While the participation - success link has not been conclusively established during research, Cavaye (1995) suggests that a

*"positive and significant participation-success link"*

has been established by a review of research findings undertaken by Pettingell (1988), and to a lesser extent by the review of Olson and Ives (1984). This relationship can therefore not be dismissed as unimportant or irrelevant, but can be proved more conclusively by further research activity, which

*"is based on sound theoretical foundations that build on the knowledge of prior research"*  
(Tait and Vessey, 1988).

## 2.4 Attributes of Participation

A number of participation attributes have been identified in the literature (Ginzberg, 1981). The attributes are type, degree, content, extent, formality and influence. The attributes relate to the following:

- a) **Type** - may vary from direct, where all users participate, to indirect, where user representatives will participate in the process (Ives and Olsen, 1984). Lawrence and Low (1993) diagnosed three types of user participation:
  - i) **Consultative** - users are consulted but system design decisions are made by IS staff;
  - ii) **Representative** - a team of users and IS staff design the system and jointly manage the project;
  - iii) **Consensus** - a democratic approach which ensures that all users participate continuously.
- b) **Degree** - refers to the amount of influence the user has over the final product. Ives and Olsen (1984) documented a number of potential user responsibilities during participation:
  - i) **Symbolic** - participation is requested, but ignored;
  - ii) **Advisory** - only advice is provided;
  - iii) **Weak control** - sign-off is requested during different stages of the development;
  - iv) **By doing** - users are part of a design team or may develop the system themselves, e.g. user-led development (Lawrence and Low, 1993);
  - v) **Strong control** - the user has to fund the development from their budget or is measured on the outcome of the development.
- c) **Content** - users may participate in different aspects of system development (Hirschheim, 1983). They can be involved in technical or social design activities.

Social design refers to the effect of the system on the organisation and its people (Cavaye, 1995);

- d) **Extent** - acknowledges that participation varies in scope during different phases of development (Ginzberg, 1981). Participation is appropriate during problem definition, requirements analysis, acceptance testing, procedure development and installation. Users are unlikely to be involved in the system design and build phases of a system (McKeen, 1990);
- e) **Formality** - participation can be formal or informal (Barki and Hartwick, [a], 1994). Formal participation occurs in project steering committees, design teams or joint application development sessions. Informal would include discussions, relationships and the execution of some tasks;
- f) **Influence** - addresses the effect of user participation on the development effort (Ives and Olsen, 1984).

## 2.5 Measures of User Participation

Since 1984, when Ives and Olsen reviewed the state of the literature, four major measures of user participation have been developed. These studies, according to Barki and Hartwick ([b], 1994), provide the best available conceptual measures of user participation. Franz and Robey (1986) assessed participation by asking users to evaluate the extent to which they performed certain design and implementation activities. Six design and seven implementation activities were evaluated. Activities such as clarifying needs and input / output requirements were included, as well as responsibilities, such as directing the planning and design phases of the project.

Baroudi (1986) identified forty seven development-related activities: twenty general activities and twenty seven activities that are from the systems definition, design and implementation stages of the lifecycle. These activities were used to construct a scale which tested theories linking participation to user satisfaction and systems use.

Robey (1989) measured participation during project meetings using a scale asking users to assess the amount of time they spent preparing for project meetings, the extent to which their opinions were consulted, and the number of questions asked during these meetings. The study excluded behaviours which occur outside such meetings, which form an important part of user activities during system development.

Doll and Torkzadeh (1990) measured involvement of users in eight development activities. Examples of these activities were project initiation, determining user needs and developing input / output screens. While this measure was broader than the scale used by Robey, a number of important participatory tasks of a responsibility nature are excluded. Examples of these are user sign-off at each stage, estimating of costs and benefits, users leading the project team, users paying for the system and being responsible for the success of the system. Participation activities of a passive nature are also excluded in the conceptualisation of the construct. These activities, where users participate by observation and listening, are nevertheless important as they ensure that users are interacting with the system developers and spending time with the IS department. Examples of these activities are users being informed of project progress or being provided with a systems walk-through.

In developing a general measure of participation, all its forms must be considered. Barki and Hartwick ([b], 1994) therefore developed a measure which includes activities that are direct, indirect, formal, informal, performed alone and with others and which occur at different stages during IS development. The end result was a scale consisting of fifty nine items to measure participation. These items are divided into four categories and includes activities performed at various stages of IS development. The lifecycle stages covered are systems definition, physical design, implementation and a non-specific stage.

The results of Barki and Hartwick's ([b], 1994) study highlighted three dimensions of participation. A responsibility dimension and two activity based dimensions. The latter consisted of activities which involve a relationship between users and IS and hands-on activities performed during physical design and implementation. These dimensions are discussed below:

- 
- a) **Responsibility** - can be general or specific. A general responsibility is where the user is the project leader or is responsible for the success of the systems. Users can have specific responsibilities relating to IS tasks, such as financial justification of the project, requesting or obtain funds. This dimension is key to user participation as it will influence the attitudes and psychological state of the user and will positively affect his use of the system;
  - b) **User - IS relationship** - this relationship refers to activities between the IS department and users on the project. Examples are formally reviewing or approving work done during the development lifecycle or evaluating and approving systems and information requirements;
  - c) **Hands-on activities** - relate to designing inputs, screen layouts and report, developing a training program and defining user procedures.

## 2.6 Summary

Research on user participation has focused on user, project and organisational factors which facilitate or hinder participation. The dynamics of the participation process has also been discussed in detail, specifically how users and IS specialist interact and how these interactions can affect the process. Once users have participated, the outcome of their efforts may not be successful. Certain motivational and cognitive factors can reduce the success of the outcome. The link between user participation and system success is widely accepted as positive, although research findings have had mixed results. The inconsistent results are attributed to a number of deficiencies in the research method. The attributes, factor and process approaches all provide valuable insights into participation, but cannot explain the concept completely. When viewed holistically, the factor and process views are complementary and together describe the concept more clearly.

The literature leaves a gap in examining user participation in the context of software package implementations. The study of user participation within the ambit of package implementations

could provide useful insights to the research community and practitioners. Having reviewed the relevant literature, a number of questions require answers. These issues are the following:

- a) What user participation activities take place during package implementations?
- b) Which factors affect user participation on such projects?
- c) Which aspects of user participation enhances the prospect of a successful package implementation?

The following chapter details the research method used to identify current practice in user participation during the implementation of packaged applications software in South Africa.

## **Chapter 3: Research Propositions**

### **3.0 Introduction**

The literature review in Chapter 2 established the underlying theory pertaining to user participation. To operationalise the theory in a practical way, a set of propositions will be developed against which the results of the analysis can be explained. The following research propositions have been identified.

### **3.2 Research Propositions**

Given the research objectives stated in Chapter 1, the propositions to determine the research objectives are:

#### **Proposition 1:**

Participation activities of users during a package implementation can be divided into three dimensions. One dimension contains a responsibility element. The two remaining dimensions are activity based. One activity based dimension describes the relationship between the user and IS specialist and the other consists of hands-on activities.

#### **Proposition 2:**

User participation activities can be categorised as strategic, tactical (control) and operational in nature. Different levels of users will therefore undertake activities at one of the three levels. Senior users will participate at the strategic level, middle managers at the tactical or control level, and end-users at the operational level.

#### **Proposition 3:**

User participation will be affected by three types of contingencies within the project, which will either encourage users to participate or inhibit their participation. These contingencies will consist of user, organisational and project factors.

#### **Proposition 4:**

**User participation will contribute to the successful implementation of packages.**

### **3.3 Summary**

The implementation of packages is complex. Understanding user participation during the implementation of packages requires similar complexity, hence the research propositions examine user participation from three perspectives: activities, user levels and contingencies. This chapter has identified the research propositions against which the results of the analysis will be measured in Chapter 6.

## **Chapter 4: The Research Method**

### **4.1 Introduction**

The aim of this chapter is to define the objectives of the research study, and to explain the method used in conducting the research.

### **4.2 The Research Method**

The research method refers to the methods or procedures employed to conduct the research. This framework of the research is defined by the philosophy of the research. Two basic philosophies can be used to base the research upon: positivism and phenomenology. The key idea of positivism is that the social world exists externally and that the properties should be determined through objective measures. The phenomenological approach assumes that reality is not concrete and exterior, but socially constructed and given meaning by the people who experience it. A middle road exists where aspects of each approach is used and combined in a pragmatic way (Easterby-Smith, Thorpe and Low 1991).

User participation involves the behaviour of people and much of the data to be obtained relates to human ideas and can be termed qualitative, as opposed to quantitative facts and figures. A non-positivist, phenomenological approach has been adopted for this research as the subject matter relates largely to human ideas and perceptions. Phenomenological research is concerned with concepts and makes use of qualitative methods of research. Surveys have often been used as the appropriate research strategy in a large number of user participation studies, however Olsen and Ives (1984) and Cavaye (1995) have pointed out that the use of surveys has contributed to the inconsistent research results obtained in establishing the user participation - success link. Cavaye (1995) also suggests that this technique has been inappropriate to explore context and to uncover new relationships. The increased use of qualitative research can enable researchers to

*"capture the rich picture by studying the concept of participation in its particular context" (Cavaye, 1995).*

This researcher has therefore chosen a qualitative research method as this may lead to a deeper understanding of the participation relationship, the process and intervening mechanisms.

The first step in the procedural framework is to conduct a review of the literature related to the area of study. This review, documented in Chapter 2, establishes the current thinking and the appropriate research methods in the area. From the literature review a number of research propositions are developed. These statements, which were discussed in Chapter 3, can be verified against further evidence collected during the field research phase.

### 4.3 The Data Collection Method

As this research is empirical, evidence was gathered from a small sample of organisations which had implemented software packages. The objective was to confirm, reject or refine the theory. A semi-structured interview approach was selected as the most effective method of gathering data on user participation. The interview provides

*"the opportunity to probe deeply to uncover new clues, open up new dimensions of a problem and to secure vivid, accurate inclusive accounts that are based on personal experience" (Burgess, 1982).*

An interview schedule was constructed. This schedule appears in Figure 4. The interview schedule was validated by two pilot interviews which found the questions to be relevant and sufficiently broad to permit meaningful results to be obtained.

**Figure 4: The Interview Schedule**

1. How did you participate during the implementation?
2. When did you participate during the implementation?
3. What encouraged or discouraged you from participating during the implementation?

4. How would you improve user participation if you were involved in a similar implementation?
5. Which user activities contributed to the successful implementation of the package and give reasons why?
6. What other aspects do you wish to discuss which are relevant to the topic?

#### **4.4 The Research Sample**

This research investigates user participation during package implementations in South African businesses. Respondents included users from all levels of the organisations, who participated in the implementation. The respondents interviewed spanned the entire spectrum of users, from senior executive, through middle managers to clerks who operated the system and included representatives from the operational and IS departments. Care was taken to identify respondents who had different roles and responsibilities on the project. Two organisations took part in this study. Both were small to medium size with a turnover not exceeding R 5 000 000 per annum. This selection effectively excluded the large financial institutions such as insurance companies. The decision to research smaller organisations was based on two factors:

- a) Small organisations were likely to have limited IT resources and the IT department would be more inclined to elicit broad user participation; and
- b) White (1995) identified a link between organisation size and the success of integrating new technologies. Because new technologies includes the introduction of systems into the organisation, it is probable that smaller organisations will be more successful in implementing package systems.

The sample was selected using the snowball approach. This approach is widely accepted in business research (Sutherland, 1994). An initial interview was held with the system sponsor in each organisation, usually a senior executive. The system sponsor then suggested further respondents. In all, 10 potential respondents were suggested. Of these, all 10 were interviewed.

More interviews could have been conducted, but after completing 12 interviews, saturation had been reached and the interview process was halted. The figure below shows the types and numbers of users interviewed.

**Figure 5: Analysis of Users Interviewed**

| <i>Type of User</i>             | <i>Number Interviewed</i> |
|---------------------------------|---------------------------|
| System Sponsor / Senior Manager | 5                         |
| Middle Manager                  | 4                         |
| End-User                        | 3                         |
| Total                           | 12                        |

#### **4.5 The Semi-Structured Interview**

The interview was structured to identify the types of activities the users performed during the implementation and when during the project lifecycle these activities had taken place. They were shown a model of the systems lifecycle as a framework to assist them in identifying when the activities had taken place. At the beginning of each interview the research question was described to the respondent. The respondent was asked to briefly describe the project and his / her role in the project to provide a context for the interview. The respondents were also asked to identify those factors within the project environment which either encouraged or discouraged them from participating. They were asked which activities, in their opinion, had contributed to the successful completion of the project and what the reason for this was. In every interview all questions were answered. If a respondent alluded to an interesting issue, follow-up questions were asked to explore this particular topic. The interview was therefore semi-structured and not completely structured in advance. This approach is in keeping with the non-positivist approach of the research and was taken in order to obtain a better understanding of the subject matter.

All 12 interviews were recorded. The respondents were asked whether they objected to being recorded, but none objected. The average length of an interview was 35 minutes. Some interviews were shorter, approximately 30 minutes, and some ranged up to 45 minutes. All the interviews were transcribed. A sample of a transcribed interview is attached in Appendix E.

## 4.6 The Data Analysis Strategy

The chosen research method used a semi-structured interview to gather evidence. No statistical analysis was done on the data. The interview data was first analysed using interpretative analysis. Interpretative analysis involves describing the facts, examining cause and effect perceived by participants, identifying emerging themes and drawing the "essences" from the text. The "essences" are subjective lessons learnt from studying the text by applying creativity, reflection and intuition. The researcher has to ask

*"What do I think? What have I learnt?"* Lacity and Hirscheim (1994).

The research propositions provided a framework within which to examine the data. Content analysis was selected as an appropriate qualitative technique to support the general lessons learnt through the interpretative analysis phase by assessing the frequency of key phrases. Content analysis involves the counting of key expressions and analysing the frequencies of each phrase. Smith, Thorpe and Lowe (1991) state that

*"this approach is often used when frequencies are required from qualitative data."*

The technique is objective, deductive and useful to test hypothesis (Smith, Thorpe and Lowe, 1991). Deductive reasoning was used to infer possible meaningful conclusions.

## 4.7 Research Limitations

The following limitations in the research method and data analysis technique have been identified.

### 4.7.1 Interview Bias

Smith, Thorpe and Lowe (1991) define interview bias as

*"the consistency with which questions are put and the lack of ambiguity in their meaning."*

The interviewer may impose his / her own frame of reference on the interviewee, both when asking questions and interpreting answers. The use of a semi-structured interview, posing "open" questions instead of leading questions may, according to Smith, Thorpe and Lowe (1991), avoid interview bias.

#### **4.7.2 Population**

The sample population surveyed was small and dictated by time and cost limitations. Two organisations were surveyed. One of the organisations was based in Gauteng and the other in a neighbouring Southern African country. Both implementations coincided with the setting up of the organisation. This could have affected the participation of users, e.g. some of the users were new to the organisation and the industry and may have had difficulty to effectively participate.

#### **4.7.3 Content Analysis**

The use of content analysis allows the researcher to understand the number and frequency of concepts mentioned by the interviewees. The researcher will be

*"unlikely to understand why the ideas occur and why individuals interpret things or issues in their different ways" (Smith, Thorpe and Lowe, 1991).*

#### **4.7.4 Organisation Size**

The organisations sampled were both small in turnover, size and number of employees. The decision to sample small organisations was based on the link established by White (1995) between organisation size and the successful integration of technology. It is proposed that the likelihood of a successful package implementation is greater in a small organisation. It is felt that the results obtained in the research can be applied to any organisation, irrespective of size.

The researcher believes that the above mentioned limitations have not adversely affected the validity or reliability of the collected evidence and will have no material effect on the research.

#### **4.8 Summary**

This research is based on a qualitative and interpretative method. The validity of this approach is based on providing interpretative knowledge of the subject matter. The interpretation must be communicated clearly in the analysis of the evidence. If this communication adds meaning about user participation during package implementation, then knowledge has been gained.

## **Chapter 5: Analysis Of The Evidence Collected**

### **5.1 Analysing The Interview Data**

At the end of the analysis phase, twelve interviews had been conducted in two organisations. The interviews had been transcribed into text and interpretative and content analysis conducted on the evidence. The result of the content analysis are frequency tables which show the number of occasions on which discussions regarding the main concepts occurred. In the analysis, reference is made to the percentage of respondents in a group. This figure is derived by noting how many respondents in the group mentioned the concept. It does not relate to the frequency with which the concept was raised. The percentage analysis takes cognisance of two factors, the number of respondents within a group who mentioned the concept and the intensity with which they felt the concept to be relevant. The analysis of the data was structured in five areas:

- a) The participation activities of users during package implementation;
- b) Observations on where during the SDLC the user efforts are focused;
- c) Factors which affect user participation;
- d) How to improve user participation;
- e) Comments regarding the effect of user participation on the success of the implementation.

The data analysis was structured into the five areas to ensure that the analysis could be related back to the research propositions. The research propositions are detailed in Chapter 3. Broadly, the research propositions stated that:

- a) Participation activities contain three dimensions: a responsibility element and two activity based dimensions. The activity based elements describe the relationship between user and IS specialist and consist of hands-on activities;

- b) User participation activities can be categorised as strategic, tactical (control) and operational in nature. Different levels of users will therefore undertake activities at one of the three levels;
- c) User participation will be affected by contingencies which will either encourage users to participate or inhibit their participation. These contingencies will consist of user, organisational and project factors;
- d) User participation will contribute to the successful implementation of packages.

## 5.2 Results Of The Analysis

### 5.2.1 Participation Activities Of Users

Figure 6 provides a list of the activities users participated in during the project with the frequencies of their responses shown in the total column. The results of the content analysis are analysed below in descending order of frequency.

**Figure 6: Content Analysis of User Participation Activities**

| Number | Code | Concept                                       | Total |
|--------|------|-----------------------------------------------|-------|
| 1      | PSE  | Package Selection and Evaluation              | 26    |
| 2      | TRN  | Training                                      | 19    |
| 3      | PPF  | Project Planning and Feedback Meetings        | 18    |
| 4      | SAT  | Conducting System Acceptance Testing          | 17    |
| 5      | USR  | Defining User and Systems Requirements        | 16    |
| 6      | ICS  | Providing Information to Configure the System | 14    |
| 7      | BPP  | Defining Business Processes and Procedures    | 12    |
| 8      | DPM  | Data Preparation for Migration                | 10    |
| 9      | DSR  | Designing Screens and Reports                 | 7     |
| 10     | PPI  | Initiating the Project                        | 7     |
| 11     | RPI  | Responsibility for Project Implementation     | 7     |
| 12     | PIR  | Post-implementation Review                    | 5     |
| 13     | PTS  | Producing Technical Specifications            | 3     |

| Number | Code | Concept                               | Total |
|--------|------|---------------------------------------|-------|
| 14     | PSC  | Participation in a Steering Committee | 2     |

#### 5.2.1.1 Package Selection and Evaluation

50% of the users surveyed selected the package. 100% of the senior users were party to the selection and evaluation of packages. None of the middle managers or end-users participated in this activity. One user indicated that some of the general managers in the firm had not been consulted in the selection process. These general managers are critical of the system.

*"It is their perception that the system does not work. This is unfair to the system. To the less informed, the system is now bad."*

Two middle managers said that they would have preferred to have been part of the decision making process in selecting a system. This would have allowed them to decide whether the system could solve their problems. The evaluation process consisted of site visits, negotiations with suppliers and product demonstrations. Five users followed a formal tender approach in selecting the solution. In one organisation, the tender approach was stopped when a selection decision was imposed by the parent company. Four out of six users in this organisation stated that the selection process had been constrained by the chosen architecture of the parent company. They were told:

*"You will choose (product X)."*

Because of this mandated approach, the end-users had

*"practically no input to the package selection."*

#### 5.2.1.2 Training

All interviewees attended training sessions on the system. Two respondents were responsible for planning the training of other users by drawing up a training schedule and matching the training needs of individuals against the training available. 25% of those interviewed conducted informal training or on-the-job training to other users during the implementation.

### 5.2.1.3 Project Planning And Feedback Meetings

Project planning activities were undertaken by 60% of interviewees. No end-users participated directly in project planning or attended formal project meetings. Only senior and middle managers were involved in these activities. The CEO of one organisation gave examples of these activities as:

- a) Mapping out key project activities;
- b) Tasking people;
- c) Reviewing and agreeing new actions.

One of the participants viewed the planning meetings as non-participative because

*"we were told what to do and when to do it. We were not able to decide why things were being done. We couldn't say I think this is a better way of doing it, because we didn't know better."*

### 5.2.1.4 Conducting System Acceptance Testing

50% of users tested the functionality of the system following a formal method. One user defined and agreed acceptance test criteria and formalised a test plan with the vendor. 35% of respondents reviewed and signed-off the acceptance test after completion. Four users tested system interfaces as part of the acceptance test. 60% of users required a more formal acceptance test phase and wider user sign-off.

### 5.2.1.5 Defining User And Systems Requirements

User requirements were identified and defined by 50% of respondents prior to selecting appropriate packages. One user stated that his needs were communicated but ignored because

*"the implementors thought they knew the client's requirements".*

The requirements of the majority of senior users (3/4) were obtained, but no middle managers or end-users were consulted. According to four users this discrepancy is attributed to the fact that users

*"were newly appointed in their positions and could not participate in a more original manner as they did not have enough experience."*

25% of respondents signed-off the user requirements document.

#### **5.2.1.6 Providing Information To Configure The System**

The majority of users (8/12) provided business information to configure the package. This information typically consisted of financial parameters such as tax rates, general ledger account codes, charts of accounts, posting periods or inventory data, such as stock items and prices. 17% of those interviewed reviewed and signed-off the data configuration prior to implementation. The lack of confirmation and sign-off caused difficulties in one of the projects as expressed by one respondent.

*"The chart of accounts was defined in discussions with some users, however, now that the users understand the package better, they want to change it and it is too late."*

#### **5.2.1.7 Defining Business Processes And Procedures**

33% of users mapped the high-level business processes to the package. More detailed process mapping was conducted by 65% of middle managers and end-users. Process mapping was deemed important by 70% of users, but consensus could not be obtained on when the mapping should take place. One user stated that they

*"should have defined the business processes first and seen how the chosen technology could support it."*

Another felt that process design should be done during implementation, involving all users. The writing of procedures around the chosen system was undertaken by 90% of respondents. Some

users (4/12) interpreted procedures as technical system operations documentation, while the majority (8/12) suggested the procedures should indicate how the business functions are performed using the system. Three out of twelve users reviewed and signed-off the process models and procedure documentation.

#### **5.2.1.8 Data Preparation For Migration**

25% of interviewees planned the migration of existing data onto the new system. Three users felt that the data migration had not been properly planned, causing difficulties after implementation. Seven out of twelve users actively participated in preparing and capturing information into the system prior to implementation. None of the users mentioned that they had verified or signed-off the data after migration.

#### **5.2.1.9 Designing Screens And Reports**

The designing of screen layouts was completed by 25% of users. For the remainder, screen layouts were fixed and non-customisable. The design of system outputs, e.g. forms and reports, was conducted by 33% of respondents. The low participation in defining reports resulted in the inability to extract required information from the system. One user said

*"I cannot get information out of the system. I wasn't asked what information I required."*

Another lamented:

*"I have to ask for financial statements, I cannot access the information myself."*

#### **5.2.1.10 Initiating The Project**

100% of senior managers interviewed participated in the initiation of the project. No middle managers were involved in this activity. Initiation included the following activities:

- a) Developing a business case to justify acquisition of the package;
- b) Budgeting;

- c) Financial justification;
- d) Communicating a need to be addressed.

Two respondents viewed their participation during initiation as

*"expressing a strong need for a system to solve various business problems."*

Mention was made by three users of working with the board to

*"obtain approval to commence the projects and to decide the way forward."*

#### **5.2.1.11 Responsibility For Project Implementation**

In both organisation surveyed, a user was responsible for the implementation of the project. One of the responsible users was the Financial director, assisted by a senior IT manager. The other was initially a project co-ordinator, who later became the CEO. In both cases, the implementation was driven by these sponsors. In the view of four of the twelve interviewees, the project was

*"top-down driven by the sponsor, and not many users were involved."*

The majority of users in one organisation (4/6) felt that the sponsors had a negative effect on user participation. One user expressed his thoughts as follows:

*"They have implemented a product, but the user is the client and his needs have not been met."*

Interestingly, the sponsor and IT manager agreed that they had isolated the users.

#### **5.2.1.12 Post-Implementation Review**

A post-implementation review was conducted by five users. One user said the review

*"identified the outstanding issues and tasked people to solve these issues."*

Another interviewee felt the review was a crises intervention caused by user dissatisfaction with the system. He believed that the system had not been delivered and that the review could not be classified as a post-implementation review.

#### **5.2.1.13 Producing Technical Specifications**

Technical design specifications were produced by three users. This activity was only undertaken for modules where customisation was required. No other users mentioned this activity, as the vendor completed design specifications. No users cited participation in the sign-off of these specifications.

#### **5.2.1.14 Participation In A Steering Committee**

Two users were members of a steering committee. Both these users were senior managers. A steering committee was only constituted in one of the surveyed organisations. One user pointed out the value of the steering committee as it

*"reviewed milestones, co-ordinated all the key players and set new actions and tasks."*

### 5.2.2 Where During The SDLC Are User Activities Focused

Figure 7 shows the participation of users during the different phases of the SDLC. The figures shown denote the number of users who participated in each phase. The phases depicted in the table originate from the SDLC model shown to users during the interview. The SDLC model is shown in Appendix B.

**Figure 7: Analysis of User Participation in the SDLC**

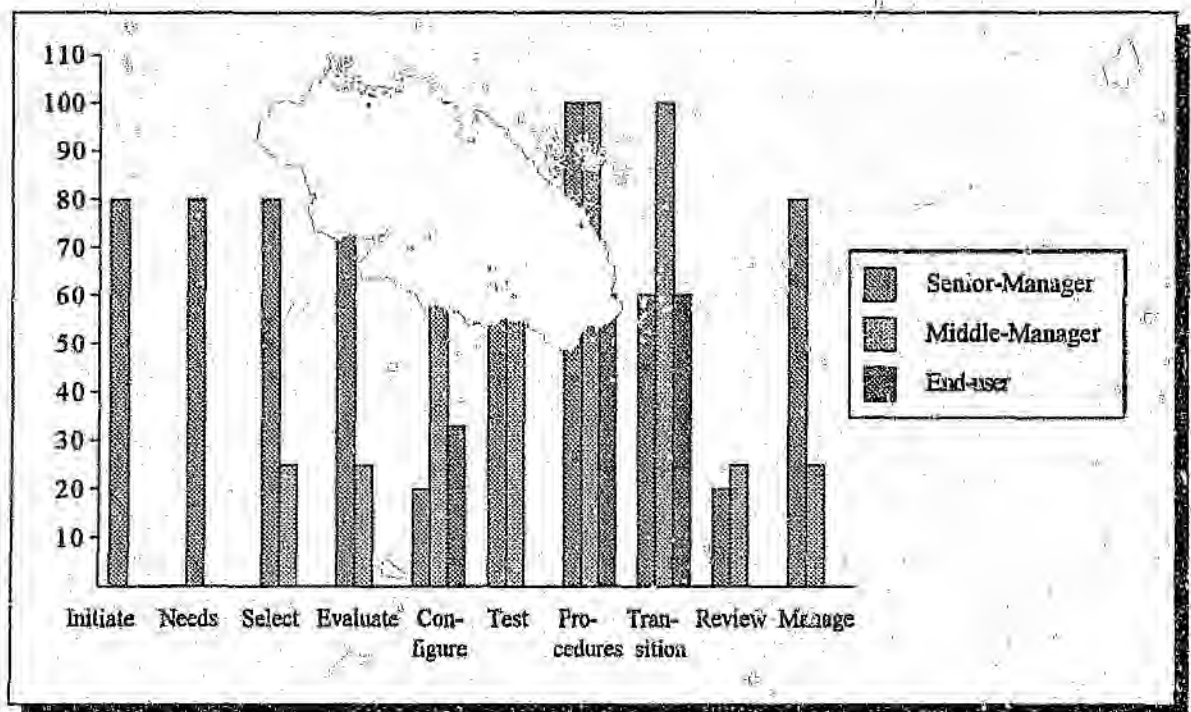
| Phase                       | End-User | Middle Manager | Senior Manager | Total |
|-----------------------------|----------|----------------|----------------|-------|
| Project Initiation          | 0        | 0              | 4              | 4     |
| Needs Analysis              | 0        | 0              | 4              | 4     |
| Package Selection           | 0        | 1              | 4              | 5     |
| Package Evaluation          | 0        | 1              | 4              | 5     |
| Package Configuration       | 1        | 4              | 1              | 6     |
| System & Acceptance Testing | 0        | 3              | 3              | 6     |
| User Procedure Development  | 3        | 4              | 3              | 10    |
| Transition                  | 2        | 4              | 3              | 9     |
| Post-Implementation Review  | 0        | 1              | 3              | 4     |
| Project Management          | 0        | 1              | 4              | 5     |

Figure 8 shows how users at different levels (e.g. senior manager, middle manager and end user) participated during the different phases of the SDLC. The figures are discussed in the following paragraph.

80% of the senior users interviewed participated in the initiation of the project, the needs analysis, selection and evaluation of the package. During the same phases, no end-users participated and only 1 middle manager was involved in the package selection and evaluation phase. Package configuration was conducted by all the middle managers surveyed, with 33% of end-users and 20% of senior users participating. No end-users tested the package, whereas three out of four

middle and three out of five senior managers assisted in system and acceptance testing. Developing procedures was evenly spread across the different user levels, with 100% of end-users and middle managers and 60% of senior users participating. The transition of the system into the live environment showed similar participation percentages as for procedure development, except that end-user participation declined to 60%. Post-implementation reviews were conducted by 20% of senior and 25% of middle managers. Project management activities were executed by 80% of senior and 25% of middle managers.

**Figure 8: Analysis Of User Participation In The SDLC (By Level Of User)**



### 5.2.3 Factors Which Affect User Participation

#### 5.2.3.1 Factors Which Encourage User Participation

Figure 9 provides a list of the factors which users identified as encouraging participation with the frequencies of their responses shown in the total column. The results of the content analysis are analysed below in descending order of frequency.

**Figure 9: Content Analysis of Factors Which Encourage User Participation**

| Number | Code | Concept                   | Total |
|--------|------|---------------------------|-------|
| 1      | QOC  | Quality of Consultants    | 12    |
| 2      | MAS  | Management Style          | 10    |
| 3      | TMC  | Top Management Commitment | 8     |
| 4      | PCH  | Personal Challenge        | 7     |
| 5      | INF  | Being Informed            | 7     |
| 6      | SUN  | Solving User Needs        | 6     |

##### 5.2.3.1.1 Quality of Consultants

Two sponsors stated that the quality of the consultant played a significant role in stimulating participation by other users. This sentiment was repeated by three end users. The respondents felt that the consultants they had worked with were

*"professional, unbiased, rational and have expertise."*

One of the sponsors, noted that he

*"trusted the judgement and respected the inputs"*

of the consultants. The financial director of one of the surveyed organisations said that

*"the quality of the consultant plays a big role. He should be hands-on and speak the language of the user."*

This factor is important as consultants were used by both organisations to assist in completing and managing specific detail activities.

#### **5.2.3.1.2 Management Style**

A non-autocratic management style was deemed important by three users. One of the system sponsors felt that a non-abrasive and open management style encouraged users to participate as they

*"did not feel as if they were being treated as idiots."*

The open-door policy of the CEO and the ability to talk to the sponsor and project manager as problems arose, were cited by four users as examples of an open management style.

#### **5.2.3.1.3 Top Management Commitment**

Top management commitment to the project in the form of enthusiasm and support for the project as well as

*"driving the project from the top"*

was noted by five out of six users in one organisation. As will be seen when analysing the factors which users perceived as discouraging, top management participation can also have a negative effect on user participation.

#### **5.2.3.1.4 Personal Challenge**

Five out of twelve users viewed the implementation as a personal challenge and therefore were willing to participate. They identified their participation in the project as an opportunity to learn and be educated.

#### **5.2.3.1.5 Being Informed**

Informing and advising users in formal and informal meetings created a forum in which 50% of users felt they could participate. Examples of the issues discussed during these meetings are:

- a) Progress made during the implementation;
- b) The working of the system;
- c) The preferred manner of operating the business.

#### 5.2.3.1.6 Solving User Needs

25% of users wanted to participate in the project as they had distinct needs which they felt the system could solve. This created expectations on their behalf of the capabilities of the system and encouraged them to participate. In some cases these expectations were not met, causing dissatisfaction with the system.

#### 5.2.3.2 Factors Which Discourage User Participation

Figure 10 provides a list of the factors which users identified as discouraging participation with the frequencies of their responses shown in the total column. The results of the content analysis are analysed below in descending order of frequency.

**Figure 10: Content Analysis of Factors Which Discourage User Participation**

| Number | Code | Concept                                | Total |
|--------|------|----------------------------------------|-------|
| 1      | MST  | Management Style                       | 22    |
| 2      | NOV  | Inexperience                           | 21    |
| 3      | PNC  | Participation not comprehensive enough | 20    |
| 4      | COM  | Complexity                             | 19    |
| 5      | QUP  | Quality of User Participation          | 17    |
| 6      | TCP  | Technical Problems                     | 16    |
| 7      | TPR  | Timing of the Project                  | 15    |
| 8      | CUL  | Culture                                | 14    |
| 9      | PST  | Project Structure                      | 9     |
| 10     | CLT  | Computer Literacy                      | 7     |

#### 5.2.3.2.1 Management Style

Eleven out of twelve users strongly supported the view that a top-down management approach by the system sponsors on the projects affected their ability to participate. A middle manager explained that

*"an autocratic management style blunts participation as people want to be told what to do."*

One user was very critical about this approach and described his perception that

*"the system has been developed by accountants and technocrats and I as a user is sitting on the side waiting for the milk to be delivered. But the milk hasn't been delivered and it isn't my flavour of milk either."*

66% of users interviewed in one organisation stated that the system sponsor had created a barrier between them and the vendor, effectively reducing their participation. The sponsor agreed that the barrier had been created but that it was

*"historically necessary, but not good."*

All of the sponsors acknowledged that their management style had affected the participation of some of the staff. One justified an autocratic style as follows:

*"To cultivate a project management discipline you must push people to meet deadlines and I saw some resistance. Staff had to be pushed in a direction to achieve project goals."*

#### 5.2.3.2.2 Inexperience

70% of users diagnosed inexperience as having affected their ability to participate on the project. The system sponsor noted that

*"users could not participate in a more original manner as they did not have enough experience."*

Inexperience extended to newly appointed staff members who were unfamiliar with the responsibilities of their jobs, lack of industry knowledge, unknown systems, new technology and novel business processes. One of the key users succinctly expressed the issue as follows:

*"For me it was a new technology, a new environment and a new job, everything was foreign to me. I hadn't developed enough of an opinion."*

#### **5.2.3.2.3 Participation Not Comprehensive Enough**

85% of users in one organisation felt that more user participation was required. In the second organisation, 33% has similar sentiments. A senior user had strong opinions about the lack of user participation.

*"I had zero participation. I was not given the opportunity to participate."*

His view was supported by three users, who felt that the dominant participation by the system sponsor prevented other users from participating.

*"The sponsor spoke on behalf of all his users, other guys were not consulted all that often."*

Two users commented that the participation of users concentrated on the financial users, while non-financial users, who required information from the system, were not consulted. Wider participation could have addressed the expectation gap which arose between what the users wanted and what was delivered.

#### **5.2.3.2.4 Complexity**

The complexity of the project and the project environment was alluded to by 60% of users. Both organisations surveyed had been involved in an organisational set-up phase prior to or during the

project. The companies were young and in a growth phase. The environments were dynamic and changing. One of the users described the difficulty of the project as follows:

*"Mind-boggling. It is totally different from anything I have ever done."*

#### **5.2.3.2.5 Quality Of User Participation**

40% of respondents were too busy with their daily tasks to participate properly. An example of the lack of time given by users was provided by the system sponsor who articulated as follows:

*"Users lacked the time and inclination to read and understand the requirements document."*

83% of interviewees cited lack of user knowledge and experience in system implementations, system capabilities, their roles, responsibilities and the industry. In one of the projects, key role-players left the project.

*"The general managers changed often. During the project, in a period of eighteen months, we had three general managers responsible for the customer helpdesk."*

Lack of maturity was pointed out as a contributing factor by two senior managers. Lack of ownership and non-commitment by users was referred to by 40% of those interviewed.

#### **5.2.3.2.6 Technical Problems**

Network instability, the non-availability of a "test" system on all user workstations to facilitate training and problems with system interfaces were examples given by 85% of users of technical problems which affected their ability to participate. The majority of senior users (3/4) appreciated that a system has imperfections and that solutions must be found to solve these deficiencies. This view was not supported by end-users, who were intolerant of system deficiencies.

#### **5.2.3.2.7 Timing**

The majority of users (10/12) felt that the implementation date was unrealistic and that a lack of available time resulted in less participation. One user stated that the implementation date should

never have been agreed to by the project team. Three users commented that shortened implementation time lessens the project costs, but puts pressure on resources and increases project risk. Most senior users (4/5) felt that in these circumstances top management were more active and prescriptive in tasking people to perform activities, rather than allowing the users to manage tasks. 70% of the junior users required more time to acquaint themselves with the project and the system.

#### **5.2.3.2.8 Culture**

Two users suggested that the culture of the organisation had a profound effect on participation. They expressed their thoughts as follows:

*"People tend to agree and accept. This can have a negative effect because you agree with something you disagree with internally."*

The lack of a learning culture was raised by one user. The existence of a culture,

*"where one can make mistakes and learn from them and encourage critical thinking,"*

without creating a negative effect on the organisation, would enhance participation. When questioned about the role of cultural issues in the organisation, a CEO stated that organisational culture did not have a pronounced effect on user participation during the project. According to him, the users were free to make decisions but were not mature enough in many cases.

#### **5.2.3.2.9 Project Structure**

50% of users in one organisation thought that the project structure was too complicated, with no clearly defined roles or project management responsibility. The structure is depicted in Appendix C. The structure caused the financial and IT sponsor to take control of the project, fulfilling the role of project manager, system sponsor and key user representative. The IT sponsor reasoned that this structure caused

*"a barrier between the developers and the users."*

#### **5.2.3.2.10 Computer Literacy**

Five users remarked on the lack of computer literacy among users. This caused them to feel threatened by technology and diminished their participation. Examples of a lack of computer literacy included no exposure to:

- a) Personal computers;
- b) The Windows operating system;
- c) The use of a mouse;
- d) Local area networks as opposed to an alone-standing PC.

#### 5.2.4 How To Improve User Participation

Figure 11 provides a list of the factors which users identified to improve participation with the frequencies of their responses shown in the total column. The results of the content analysis are analysed below in descending order of frequency.

**Figure 11: Content Analysis of Factors to Improve User Participation**

| Number | Code | Concept                          | Total |
|--------|------|----------------------------------|-------|
| 1      | UBI  | User Buy-in                      | 19    |
| 2      | PSE  | Package Selection and Evaluation | 17    |
| 3      | BKG  | Bridging the Knowledge Gap       | 16    |
| 4      | MAS  | Management Style                 | 15    |
| 5      | REA  | Needs / Requirements Analysis    | 13    |
| 6      | LOP  | Level of Preparedness            | 12    |
| 7      | FAT  | Formalise Acceptance Testing     | 12    |
| 8      | CFO  | Client Focus                     | 11    |
| 9      | REP  | Reengineer Processes             | 9     |
| 10     | TES  | Technical Stability              | 8     |
| 11     | IPM  | Implementation Management        | 7     |

##### 5.2.4.1 User Buy-In

80% of users thought that participation is essential to obtain user buy-in and commitment to a system. The majority of users (7/12) saw the achievement of committed users as a crucial role of the system sponsor and the project manager. By allowing meaningful participation of different users throughout the lifecycle of the system, user commitment could be obtained. A senior user specifically mentioned that presenting users with potential system solutions and being part of the decision making process would

*"get buy-in into the product and ensure that commitment will be there."*

##### 5.2.4.2 Package Selection and Evaluation

60% of respondents supported stronger user participation at all levels of the organisation in the package selection and evaluation process. End-users should not be excluded from this process. Users (8/12) have a desire to view the available packages and know the system capabilities before the system is procured. Three users pointed out that the selection was technology driven and not focused on the client needs. This was expressed as follows:

*"The project was technology driven, not user driven."*

and

*"The implementation had a product, and not a client focus."*

#### **5.2.4.3 Bridging the Knowledge Gap**

75% of interviewees said that the lack of knowledge of users regarding the industry, system and technology had a major influence on their ability to meaningfully participate. According to the interviewees, this gap could be addressed through training, education and communication. Examples of training were:

- a) Seeing the system in operation at a reference site;
- b) Spending time "shadowing" an employee who knows how to use the system;
- c) Educating people about the implications of the implementation;
- d) Communicating freely and openly to users about their needs and what they require from the system.

#### **5.2.4.4 Management Style**

95% of senior users interviewed propagated a management style, whereby top management was committed to the project and provided direction and engendered enthusiasm, while enabling end users to participate. The majority (4/5) felt, however, that circumstances such as lack of time, project complexity and limited quality of user participation forced a more autocratic style to be used. According to four users, teamwork is important and should be encouraged.

#### **5.2.4.5 Needs / Requirements Analysis**

Users across all levels of the organisation, not only senior managers, should participate in the identification of system needs, according to 65% of respondents. Three users indicated that the information requirements of other departments were overlooked and that the needs of only the primary financial users were catered for. 70% of the users in one organisation pointed out that the requirements had not been formally approved and signed-off by users, and that this contributed to their needs not being met by the delivered system.

#### **5.2.4.6 Level of Preparedness**

The level of preparedness relates to ensuring that users are prepared for accepting the new technology, according to 30% of respondents. One user voiced his opinion as follows:

*"This is a key variable, where one has very little room for personal judgement."*

Ensuring that staff are prepared includes that they are knowledgeable about the system, the technology and have the required skill and experience to execute their responsibilities. Five users referred to the fact that a new and dynamic business environment affected the preparedness of users. An area that is often overlooked (mentioned by three users) is the level of computer literacy of staff. A user suggested that to overcome the literacy issues one should

*"address the development needs of users in terms of computer usage before implementing the system. If not, we will have a vacuum, people will not use it as there is resistance to the technology."*

#### **5.2.4.7 Formalise Acceptance Testing**

55% of users identified the need to formalise the acceptance testing phase by ensuring that users conducted the acceptance test according to a set method and that the test was signed-off after completion. According to one user, a formal sign-off would

*"acknowledge that the systems works, that users take responsibility for it and that they will be able to deliver outputs from the system."*

Four users pointed out that acceptance testing is necessary to ensure that the system meets the original requirements of the users and any modifications agreed upon. However, according to a respondent

*"too much of the system acceptance test is done after implementation."*

#### **5.2.4.8 Client Focus**

20% of interviewees indicated that the project lacked a client focus and was driven by a technology solution. This was caused partly because the choice of the technology was mandated by the parent company, according to four users. A senior user stated that even if the technology was a given,

*"user participation would have made it more acceptable, at management and worker level."*

#### **5.2.4.9 Reengineer Processes**

25% of respondents noted that reengineering the business processes to fit the package during the implementation, as opposed to after implementation, would have been an ideal opportunity to allow participation. This would have assisted in transferring knowledge to users about the business, industry and the system and would have enhanced commitment to the system.

#### **5.2.4.10 Technical Stability**

30% of respondents pointed out that technical stability, e.g. reduced network problems, available workstations and access to a prototype system to train on, is required to ensure users remain confident in the system and do not become frustrated.

#### **5.2.4.11 Implementation Management**

Three out of twelve users regarded an improvement in project management essential to ensure ongoing participation. The following examples were given:

- a) Regular feedback meeting to managers and their staff;
- b) The production of a roll-out plan and milestones to measure project performance against;
- c) Frequent communication from the project team to generate excitement and to help manage expectations.

### **5.2.5 The Effect Of User Participation On The Success Of The Implementation**

The question was put to the interviewees whether the project was a success and whether user participation had contributed to the success of the implementation. 66% of respondents said that the project was an unqualified success, 17% stated that partial success had been achieved and a further 17% felt that the project was unsuccessful. Of the 66% of interviewees who felt that the project was a success, all eighth stated that user participation was a key contributor to a successful implementation. The strong support for the positive effect of user participation on system success is expressed in the following quotes by users:

*"I only view a system as complete and implemented when you have user buy-in."*

*"User participation makes or breaks a project. I think it is the most important thing."*

*"Without user participation you would have no implementation."*

70% of users interviewed felt that many other factors affected the success of implementations or the lack thereof. Examples of these factors were the chosen technology, the existence of standards and quality. The view was expressed that:

*"It is an oversimplification to say user participation is a key factor, it is one of many."*

Three users stated that the lack of user participation was

*"directly linked to the lack of success on this project."*

### **5.3 Summary Of The Analysis**

The analysis of the findings has revealed the following:

- a) The activities that users participate in during package implementations;
- b) Where during the SDLC these efforts are focused;

- c) The factors which positively or negatively influence user participation;
- d) Suggested improvements to facilitate user participation;
- e) The thoughts of the respondents on the effect of participation on the success of the implementation.

These results now need to be considered in the light of the research propositions which were presented in Chapter 3, so that it can be established whether the propositions were supported or rejected by the findings. This is done in the following chapter.

## **Chapter 6: Interpretation Of The Results**

### **6.1 Introduction**

The objectives of this research have been stated as follows to:

- a) Identify user participation activities during the implementation of software packages;
- b) Explore whether the participation activities can be categorised into strategic, tactical and operational elements using the Anthony triangle;
- c) Map these activities to the SDLC to establish when these activities take place in the development lifecycle of a software package;
- d) Inquire which factors affect participation by users during such implementations;
- e) Broadly establish if user participation contributes to successful implementations;
- f) Define a set of guidelines to assist managers to improve user participation during the implementation of software packages.

### **6.2 Support For The Research Propositions**

Four research propositions were stated previously. In this chapter we review each proposition in the light of the findings in order to ascertain the extent to which it was either supported or rejected by the evidence.

#### **Proposition 1:**

Participation activities of users during a package implementation can be divided into three dimensions. One dimensions contains a responsibility element. The two remaining dimensions are activity based. One describing the relationship between users and IS specialists and the other consisting of hands-on activities.

The research identified all three dimensions of user participation, namely the responsibility element, the IS specialist - user relationship and hands-on activities. The existence of the responsibility element was strongly supported by the research. Responsibility is a key element in effective participation. In both organisations, a user had overall responsibility for the implementation and success of the project. The project was not the responsibility of IS, although IS had a joint responsibility in one organisation. The majority of users (8/12) were given general responsibility for the completion of certain tasks.

The dimension of an IS specialist - user relationship refers to the review and approval of deliverables which are produced in the SDLC. The existence of review, approval and sign-off activities was partially supported by the research findings. For example, approval and sign-off was obtained for user requirements (25% of users), configuration data (17%), test plans and results (35%), process flows and procedure documentation (25%). Data migration and technical specifications were not reviewed or approved.

The existence of hands-on activities was strongly supported by the research. A large majority of users participated in activities such as defining procedures, migrating data and configuring the system. 60% of users participated in initial planning activities. Planning during the project, e.g. of training, testing and migration, was limited.

#### **Proposition 2:**

User participation activities can be categorised as strategic, tactical (control) and operational in nature. Different levels of users will therefore undertake activities at one of the three levels. Senior users will participate at the strategic level, middle managers at the tactical or control level, and end-users at the operational level.

Senior managers are expected to make strategic decisions regarding the profitability and investments of an organisations. Their participation in a package implementation is expected to be focused on activities which are of a strategic nature. The results strongly supported this statement, showing that 80% of the senior users participated in the initiation of the project, the needs analysis, selection and evaluation of the package and the management of the project. Participation of senior users during package configuration (20%), system and acceptance testing (60%),

developing procedures (60%) and transition of the system into the live environment (60%) declined as these activities are of a control and operational nature. The reasonably high percentage of senior management participation during the acceptance testing, procedure development and transition phases can be attributed to two factors highlighted in the research. The dominant top-down management approach which excluded users in some instances and the lack of experience and knowledge of users in both surveyed organisations.

Middle managers manage the work affected by the system and use information for tactical or management control decisions. Their participation in a package implementation is understood to focus on the control aspects of the system. The results are mixed, strongly supporting the statement in some cases, and offering some support in others. No middle managers participated in the initiation of the project or the needs analysis phase. One middle manager was involved in the package selection and evaluation phase. While the aforementioned phases largely concentrate on strategic issues, control aspects are also covered and wider middle management participation would be advantageous during the needs analysis, package selection and evaluation phase. As expected, middle management participation in all other phases was high, e.g. package configuration (100%), system and acceptance testing (75%), developing procedures (100%) and transition (100%).

Employees or end-users apply the system outputs to facilitate the operations of the organisation. Their participation in a package implementation is expected to concentrate on the detailed operational aspects of the system. The results strongly supported this statement, showing that no end-users participated during project initiation, needs analysis, package selection and evaluation. Low participation was found in package configuration (33%). This activity revolves around control aspects, e.g. vat rates and general ledger codes, and is carried out by middle managers. High participation was found in developing procedures (100%) and systems transition (60%). Surprisingly, no end-users were involved in system and acceptance testing. This could be a key phase for them to participate in.

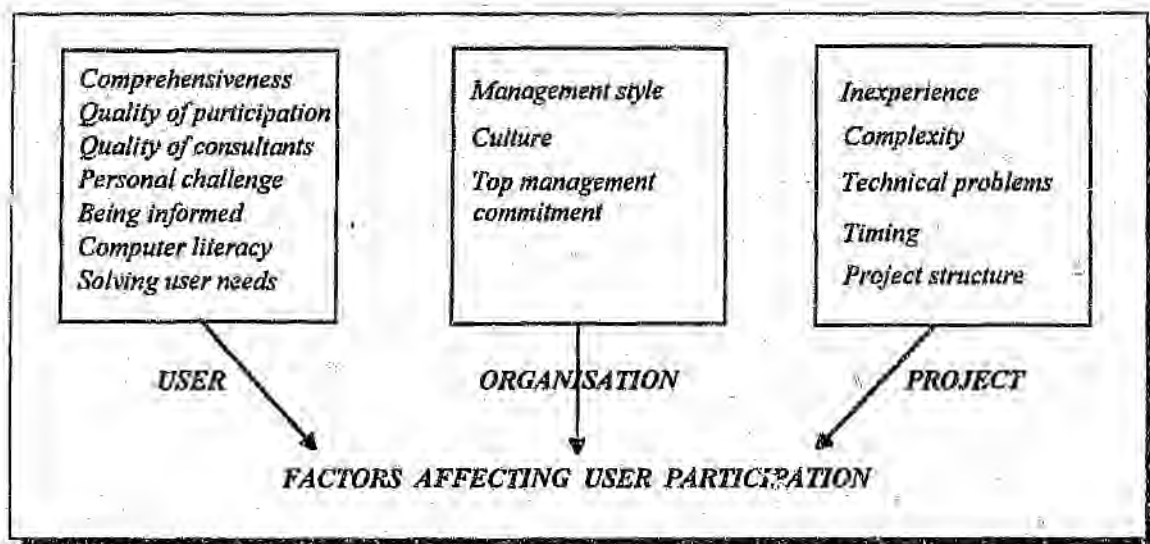
The high-level participation activities are mapped to the Anthony triangle in Appendix D.

### Proposition 3:

User participation will be affected by three types of contingencies within the project, which will either encourage users to participate or inhibit their participation. These contingencies will consist of user, organisational and project factors.

This statement was fully supported by the results of the analysis. Sixteen broad concepts were identified to describe the factors which affect user participation. Of the sixteen, ten concepts described factors which discourage participation, while six concepts highlighted factors which encourage participation. 44% of the factors can be classified as user related, 31% were organisational and 25% referred to project factors. Figure 12 shows the factors, which were identified in the research, grouped by classification.

Figure 12: Classification Of Factors Which Affect User Participation



### Proposition 4:

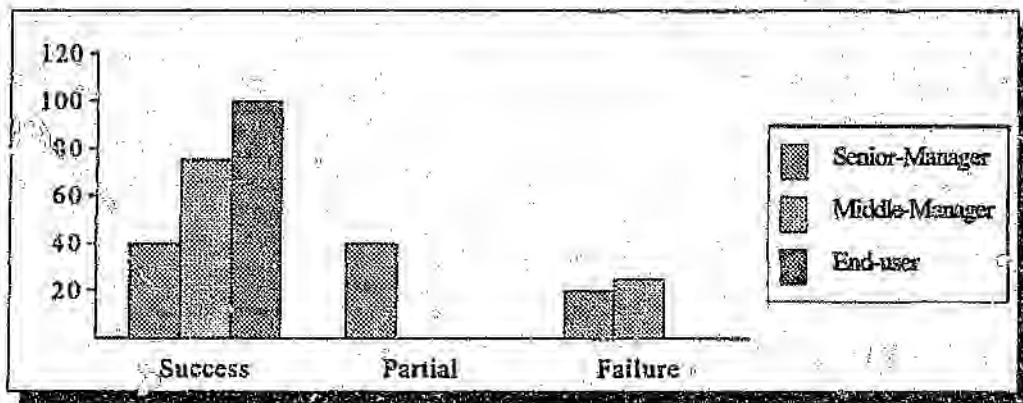
User participation will contribute to the successful implementation of packages.

This statement was strongly supported by the results, with 66% of respondents stating that the project was an unqualified success and 17% citing that partial success had been achieved. 17% of users felt that the project was unsuccessful. Of the interviewees who felt that the project was an unqualified success, all eight stated that user participation was a key contributor to a successful

implementation. However, 70% of all users interviewed felt that user participation is a key factor, but that it is one of many other important factors.

Figure 13 analyses the responses of different levels of users to the question whether the system implementation was a success. An interesting conclusion can be drawn from the results. A link seems to exist between the level of the user in the organisation and their view of system success. Senior managers take a strategic and holistic view of system success (e.g. usage, acceptance, satisfaction and financial justification) and are inclined therefore to be more critical when evaluating the overall success of a project. In contrast, end-users view success from an operational perspective and are more apt to view the system as successful if it allows them to perform their functions more effectively.

Figure 13: Project Success (By Level Of User)



### 6.3 Unexpected Findings

The research has highlighted some unexpected findings. These findings are discussed in the following paragraphs.

#### 6.3.1 Actual And Perceived Management Style

Most of the respondents interviewed suggested that management should follow an open, democratic management style during the implementation of packages to encourage users to participate. However, the behaviour of the respondents, as expressed in comments made during

the interviews, appear contradictory. The statements made by the interviewees hint that, while they perceive a participatory style to be preferred, the actual management style that prevailed in both the organisations was autocratic. It is possible that this style of management was necessitated by a number of factors, such as the:

- a) Limited time available to implement;
- b) Inexperienced staff;
- c) New technology.

### **6.3.2 Integration Of New Technologies**

The implementation of a software package introduces new and complex technologies into an organisation. The introduction of the novel technology and the effect that it has on the people, business processes and existing systems should not be underestimated. The assimilation of technology into the firm is an important issue during the implementation of software packages. Several interviewees mentioned issues relating to technology as having affected their participation in the project. Examples are the:

- a) Preparedness of users;
- b) Lack of computer literacy;
- c) Inexperience in systems, technology, business processes and the industry.

White (1995) supports this view by suggesting that the model for integrating new technology has wider application, particularly in the context of system development projects.

### **6.3.3 Organisation Culture**

The prevailing culture of an organisation is likely to have a bearing on the number of problems encountered during the implementation of an information system. The more open and tolerant a company, the fewer problems are confronted during the implementation. The more autocratic and

bureaucratic the firm, the more problems are faced during the project. Evidence to support these assumptions were found. Some users were hesitant to take decisions to solve problems, in case they made a mistake. Often problems were identified but not solved until the consequences became too evident and senior management had to intervene. This apparent association between organisation culture and problem solving / decision making during a system implementation could be researched further.

#### 6.3.4 The Success - Level Of User Relationship

The view of a successful system implementation differs between levels of users. Senior users view system success more holistically, taking into consideration factors such as user acceptance, user participation, ease of use and availability of information. If the implemented system does not comply with one or more of these factors, the system could be viewed as unsuccessful. Middle managers and end-users take a narrower view of system success. If the system improves the way in which they perform their daily tasks, for example by providing more automation or better reporting, the system is likely to be a success. This potential link between the view of system success and the level of the user in the organisation could be a topic for further research.

#### 6.4 Summary

The evidence collected suggest that all four propositions were supported to a greater or lesser degree by the respondents, as shown in Figure 14.

**Figure 14: Support For The Research Propositions**

|                    | Total Agreement | Strong Support | Some Support |
|--------------------|-----------------|----------------|--------------|
| First Proposition  |                 |                | ✓            |
| Second Proposition |                 | ✓              |              |
| Third Proposition  | ✓               |                |              |
| Fourth Proposition |                 | ✓              |              |

## **Chapter 7: Conclusions**

### **7.1 Introduction**

This chapter outlines the main findings of the research, provides guidelines to South African managers and suggests further areas for research.

### **7.2 Main Findings And Implications**

Four research propositions were put forward:

- a) The research has confirmed that user participation contains three dimensions. A responsibility element and two activity based dimensions. The responsibility element is critical to effective participation as it implies that a user manages the project and is responsible for the success of the project. The IS specialist - user activities consist of the approval, review and sign-off of tasks. This dimension is often overlooked or completed informally. More formality and attention is required to ensure this dimension is not neglected. Hands-on activities are well understood and consistently executed;
- b) The research has indicated that it is possible to categorise user participation activities as strategic, tactical or control, and operational and to identify which level of user should undertake these activities. Support was obtained for the view that senior managers should undertake strategic participation activities, middle managers tactical and control activities, and end-users detailed, operational tasks. The high-level activities were mapped to the different levels of users, using the Anthony triangle;
- c) The research proved conclusively that user, organisational and project factors influence user participation, both positively and negatively;

- d) The research has provided mixed results on the link between user participation and system success. A strong link was expressed by the majority of respondents, but the existence of a number of other factors in the system implementation process prevents the drawing of a conclusion that user participation will lead to a successful implementation. User participation is, however, a key factor as expressed by 70% of respondents. These findings are supported by previous research which was discussed in the literature review.

All the research objectives were met.

### **7.3 Implications For The South African Manager**

As with any management research, the ultimate aim of the research is to provide guidelines for management. The following guidelines may be useful to management engaged in a package implementation:

- a) User participation should be as broad as possible. Users at all levels of the organisation should be active during the project. This should include top management, middle managers and end-users. The participation should include users being responsible for the entire implementation or parts thereof, the completion of hands-on activities and sign-off and approval of key deliverables and milestones;
- b) The participation of users can be grouped into the execution of strategic, tactical and operational activities. In order to optimise user participation, different levels of users should participate where they can provide the most value. For example, senior users should concentrate on issues of strategic importance, such as the selection of the most appropriate package and the information required to manage the business. Middle managers should contribute on tactical issues, for example the levels of control required in the system and the detail procedures. End-users should participate in operational activities, such as the design of specific input screens and reports. Where senior managers become too involved at the operational level, the

importance of their contribution diminishes. Similarly, end-users are often totally excluded in the implementation, resulting in little commitment to the system;

- c) The implementation of a software package brings about significant change in the people, processes and systems of an organisation. The organisation must therefore be prepared for the change, prior to the commencement of the implementation project. The change should also be managed throughout the project. A dimension of change management which is becoming increasingly important is system change management. Some aspects of systems change management to consider are the following:
  - i) Are the staff PC literate?
  - ii) Can they use the operating system, for example Windows?
  - iii) Are they aware of the capabilities of the new technology being introduced?
  - iv) What systems training do they require to perform their functions?
- d) The selection and evaluation of an appropriate software package and the hardware to operate the package should follow a formal process. All key business users should be part of the selection and evaluation process. The IS department should not drive the selection, but they are an important participant. The selection of a software package is based on satisfying a business need and the business users should be responsible for the decision. Package selections mandated by IS and based on technology decisions alone, have a high risk of failure;
- e) Technology is rapidly being introduced into organisations. The implementation of package systems is an example of such technology introduction. The speed at which new technology becomes commercial and the sophistication of the technology creates a knowledge gap in staff. Management should play a dominant role in attempting to close this knowledge gap by implementing mechanisms to inform, educate and train staff on an ongoing basis;

- f) The implementation process is generally too informal with little emphasis on the achievement of critical milestones in the project. Organisations should formalise the SDLC by using a methodology. The use of a methodology will enforce the achievement of milestones, the production of key deliverables and the roles and responsibilities of resources during the implementation. In addition, a methodology would highlight the importance of users reviewing, accepting and signing-off the major deliverables, such as system acceptance test results, user procedures, data migration and the system configuration;
- g) The package implementation should have a client focus. This client focus includes the external customer and the internal client, or user of the system. The software package must address the needs of the user to operate and manage the business, and not the needs of the IS department. If the package has a dominant technology focus and the requirements of the user are not satisfied, the implementation is likely to be unsuccessful;
- h) The implementation of a package system should be managed on a full-time basis using established project management principles. Project management is required from the initiation of the project, throughout all the phases of the SDLC until the post implementation review stage. Managing the project on a part-time basis or having unclear management responsibility, dramatically increases the risk of project failure;
- i) A situational management style is appropriate during the implementation of a package. To obtain the participation and commitment of users and other project participants, a participative style is useful. However, in certain cases, for example when the time to implement is limited, the use of a more autocratic style can be appropriate. Managers should assess which style is appropriate in each situation, bearing in mind factors such as the experience of the staff and the importance of the decision. Strong leadership and commitment from top management remains important to ensure a successful project;

- j) Communication during the implementation of a package cannot be underestimated. A combination of formal and informal communications are required. Formal communication forums include regular project meetings and workshops to solve specific issues. Examples of informal forums encompass newsletters and the use of bulletin boards.

## **7.4 Suggested Areas For Further Research**

The report highlights some areas where further research is suggested:

- a) Further develop the categorisation of user participation activities as strategic, tactical and operational;
- b) Research the effect of user participation on the success of package implementation in depth, using surrogate measures of system success, such as user satisfaction, ease of use and perceived usefulness;
- c) Explore the effect of culture on user participation. This includes not only organisational culture, but also ethnic culture. This could prove to be of interest as package implementations become more prevalent in the Southern African region;
- d) This research has identified an apparent association between organisation culture and the number of problems encountered and solved during a system implementation. Further research could establish the nature of this association;
- e) This research has surveyed small organisations. The findings of the research should, however, apply to large organisations. The findings of this research could be used as a pointer to determine whether they can be applied to package implementations in large organisations;
- f) This research has uncovered a possible link between the view of system success and the level of the user in the organisation. The interpretation of a successful system implementation differs between top management, middle management and

end users. Further research could establish the nature of the system success - level of user relationship.

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## Appendices

**Appendix A:**  
**Example Of An Interview Transcript**

**User Name:** Joanne de Wet

**Position:** Team leader for the implementation of the assets, financial and purchasing modules of a package

**1. How did you participate during the implementation?**

We obtained the user requirements for each module - produced a requirements document - set-up the system - a design prototype was developed to ensure that the user requirements were met - produced a design document - trained users, mainly on-the-job training - tested the modules and interfaces - prepared data before implementation - converted data to the new system - provided support for the first month after going "live" - documented user procedures - reviewed the implementation sponsor after a month.

**2. When did you participate during the implementation?**

The model of the SDLC was shown to the interviewee. This model is depicted in Appendix B. Special mention was made of the following issues:

- Technical procedures were not sufficient.
- The network was unstable.
- Acceptance testing was not thorough enough.
- Data migration was a problem, especially for debtors.
- Migration was not planned properly and this caused problems after going "live".

**3. What encouraged or discouraged you from participating during the implementation?**

The following encouragement's were mentioned:

- The project had a committed sponsor at senior management level.
- The organisation did not have an existing IT department, who might have felt threatened by the implementation of a package.

The following discouragement's were mentioned:

- The project management role was not clear and was shared by a number of people.
- The project was driven from the top, and this restricted user participation.
- The instability of the network.
- Some managers were negative and the company had a history of unsuccessful implementations.
- Certain implementors were very technical and could not get "buy-in" from users.

**4. How would you improve user participation if you were involved in a similar implementation?**

Get more user commitment and "buy-in" - keep users constantly informed - transfer knowledge to users about the system - encourage users to participate.

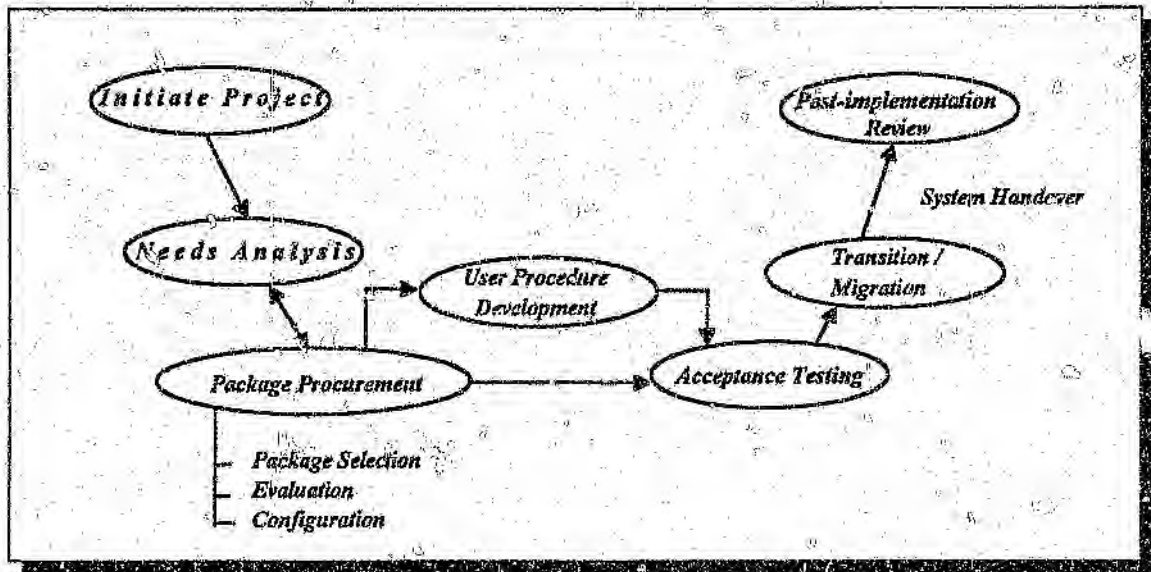
**5. Which user activities contributed to the successful implementation of the package and give reasons why?**

The time and effort given by certain users - a willingness to learn - being responsible for certain parts of the implementation - taking ownership.

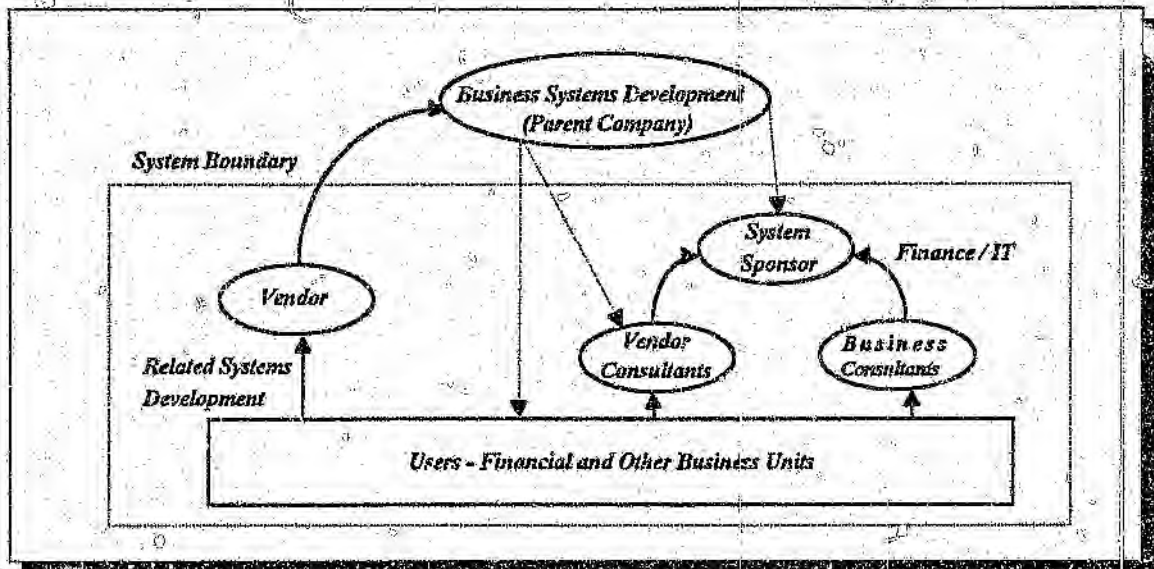
**6. What other aspects do you wish to discuss which are relevant to the topic?**

User participation makes or breaks a project. It is more important than the technical aspects such as configuration. If the configuration is 100% correct, but the users do not understand the system, the project will be a failure.

**Appendix B:**  
**The SDLC Model Presented To Interviewees**

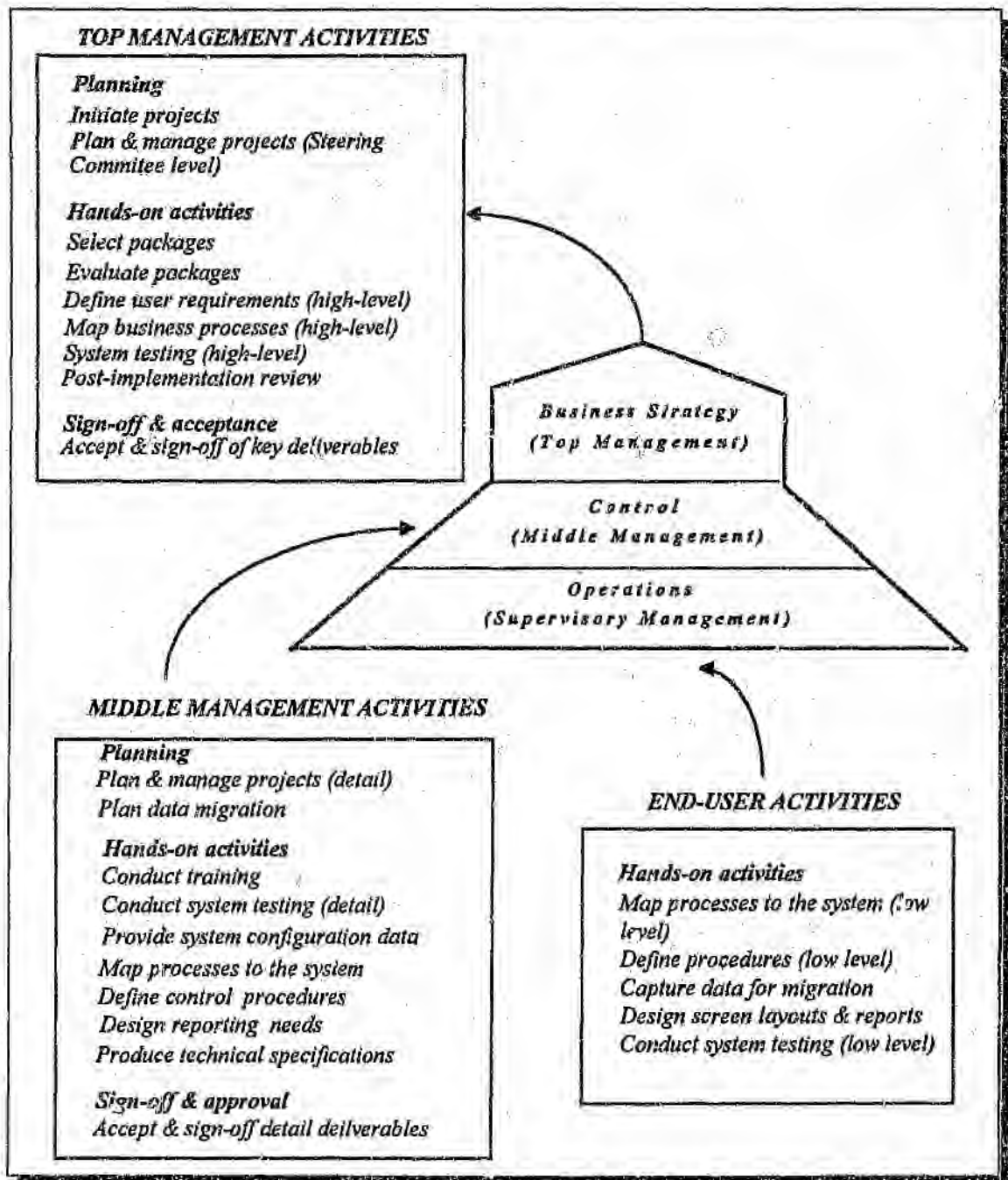


**Appendix C:**  
**Project Structure Of Organisation "A"**



## Appendix D:

### Mapping High-Level Participation Activities To The Anthony Triangle







**Author: Coetzee Jean-Pierre.**

**Name of thesis: User participation during the implementation of software packages.**

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