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THE IMPORTANCE OF NEGOTIATING FOR IMPROVED INFORMATION SYSTEMS DELIVERY

BY

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A dissertation submitted to the Faculty of Commerce, Law and Management, University of the Witwatersrand, Johannesburg, in fulfilment of the requirements for the degree of Masters of Commerce.

JOHANNESBURG
SOUTH AFRICA
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Dedicated to my parents,
Ioannis and Paraskevi Sirinidis

ABSTRACT

Interpersonal Conflict is a neglected topic in Information System Development (ISD). While deemed important, few ISD studies have examined interpersonal conflict, the management of this conflict, or the impact this conflict has on project outcomes. Research in this field has revealed that conflict between different user groups within the systems development team is considered to be a significant threat to the success of a project. Failed systems have been attributed to resistance to system change, political issues that arise as a result of the system change and poor quality of teamwork between users and technical staff, analysts, programmers and other IS professionals and cultural differences. Better methods of systems analysis and design are thus needed to ensure appropriate, feasible and acceptable programs and applications and it is therefore with this intention, that this dissertation is submitted: to consider organisational behavioural means, in particular the importance of negotiating within the Systems Development process, to improve systems development.

There were multiple objectives to this dissertation. These were:

- to investigate whether system development is currently experienced as a process of conflict
- to ascertain which roles experience a greater degree of conflict
- to ascertain which systems development life cycle (SDLC) and which methodologies experience a greater degree of conflict
- to assess whether negotiating skills vary across the different roles within the SDLC, to assess whether negotiating skills vary across SDLC methodologies
- to determine whether the interest to improve negotiating skills varies within the SDLC
- to evaluate the importance attached to negotiating skills in the SDLC
- to assess whether the acceptance of the proposed negotiating framework for systems development varies within the SDLC
- to examine what factors play a role in the acceptance of the proposed frameworks and
- to assess whether the proposed framework will improve systems delivery.

The reach of the research was limited to organisations in Southern Africa. These organisations were either large software development houses, or small IT departments within organisations, which specialised in developing either outsourced systems or in-house systems. Self-administered questionnaires were mailed out to system development teams in South Africa, of varying industries and a total sample of one hundred and fifty five respondents replied. A quantitative approach was adopted to analyse the data.

The results of the research show that minimal conflict is currently experienced in the SDLC and respondents across all roles and methodologies feel they possess negotiation skills to handle the conflict. The majority of the sample favourably accepted the proposed framework. Some roles attached more importance to the need for negotiating skills in their line of work, and paid more attention to improving their negotiating skills than others.

DECLARATION

I hereby declare that this dissertation is my own, unaided work. It is being submitted in fulfilment of the requirements for the degree of Master of Commerce in the University of Witwatersrand, Johannesburg. It has not been submitted before any degree or examination in any other university.

GEORGIA SIRINIDIS

Signed on this the ___ day of _____ , 2005.

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CHAPTER ONE

INTRODUCTION

1.1 INTRODUCTION

This chapter serves to explain the motivation behind the research. It briefly explains the significance of the research, provides a background of the study, the aims and objectives of the research, it outlines the structure of the report and finally details the implications, limitations and prospective research opportunities that may emanate from the study.

1.2 THE RESEARCH PROBLEM

This study examines the importance of negotiating skills and the contribution that such skills may have to final systems delivery. The premise is that the introduction and development of negotiating skills, as well as the implementation of a negotiating process within the generic Systems Development Life Cycle (SDLC), will positively affect information systems delivery.

1.3 PURPOSE OF THE STUDY

The purpose of the study is to provide a comprehensive literature review on the subject of negotiating in the systems development environment. This idea was taken a step further, investigating whether negotiating skills have any effect on the success of a systems project. Much of the literature indicated an area of weakness in communication, and more specifically in decision-making and in the ability to resolve conflict. The purpose of the research was therefore primarily to create an awareness of the lack of such skills, to encourage IT organisations to see the benefits of improving these skills, and ultimately to assist development teams to deliver successful systems by providing them with a Negotiating Framework.

1.4 BACKGROUND OF THE STUDY

The concept of persuasion and negotiation, like that of power, often mystifies businesspeople. It is so complex that many would rather just avoid it all together. But, like power, persuasion can be a force for enormous good in an organisation. It can pull people together, move ideas forward, galvanise change, and forge constructive solutions. To do all that, however, people must understand persuasion and negotiation for what it is- not convincing and selling, but learning and negotiating. Furthermore, it must be seen as an art form that requires commitment and practice, especially as today's business contingencies make persuasion and negotiation more necessary than ever (Conger, 1998).

Discord within organisations, conflict of interests between organisations in industry, tensions and conflicts within departments of an organisation, difficult relations with external interests groups, etc. are making ever-increasing demands on people's ability to handle pronounced differences and clearly opposed viewpoints. People are increasingly confronted with the question of how to cope with conflicting interests (Mastenbroek, 1990).

Although the solution to dealing with conflicting interests is to negotiate, few attempts until now have been undertaken to study the negotiating process- to identify strategies and skills which are most likely, settlements satisfactory to the parties with minimal expenditure of time, money and risk of warfare (Kuechle, 1990). Capable negotiators know how to reach compromises that satisfy both parties. Sometimes they are able to find solutions that have clear benefits for both parties. They can generally prevent escalations and deadlocks (Mastenbroek, 1990).

It comes as no surprise therefore, that negotiating has become an important topic of research in the social sciences (Mastenbroek, 1990). It can thus be inferred that negotiation skills are equally significant in the field of Information Systems (IS) development, as systems development involves a social process of communication, learning, and negotiation, both within and between stakeholder groups including IS analysts, users, and other interested parties such as senior management (Walsham, 1993).

Systems developers approach the development task with a number of specific and inferred assumptions about the nature of human organisations, the nature of the design task, and what is expected of them (Hirschheim and Klein, 1989 and Dahlbom and Mathiassen, 1993). These assumptions establish the foundation of a very large number of structured methodologies, which are intended to assist IS analysts during the design and development process. Some of these methodologies however, take no account of human and organisational issues (Walsham, 1993). It is for this reason that Walsham insists that the design and development of information systems should not be considered a straightforward task, as many developers assume, but as a social, subjective and political process with a technical component (Keen, 1981; Robey and Markus, 1984 and Hirschheim and Smithson, 1988).

It is in Leritz's (1991) view that regardless of the industry, success depends upon two factors. The first factor is technical knowledge and skills. The second factor is the ability to get others to co-operate. This second factor, skill at negotiating, will usually make the difference between high achievement and mediocrity – or even failure.

1.5 AIMS AND OBJECTIVES OF THE RESEARCH

This research topic attempts to make an original contribution to IS theory as well as reveal opportunities for future research. The research primarily aims to assist system development teams in their negotiating abilities in systems development. It will be used to apply negotiation skills to the systems development life cycle (SDLC) and ultimately produce benefits from these abilities, in terms of improved performance in system development.

A model will be presented in the research and aims to assist system development teams at each stage of the SDLC. It will be a model that will frequently be consulted, in order to facilitate negotiations within the SDLC team, and at what level to do so.

This research aims to:

1. Increase the awareness of the importance of negotiation abilities in systems development;

2. Suggest manners in which system development teams can improve their negotiation skills and
3. Determine whether systems development can be improved with the use of negotiation skills.

1.6 STRUCTURE OF THE DISSERTATION

The dissertation comprises of seven chapters.

1.6.1 Chapter One: Background to Research

This chapter has introduced the motive for the research and given an overview of the research problem. The research objectives have been identified.

1.6.2 Chapter Two: Background to Systems Development

This chapter will reveal the established information in the field of systems development. Systems development will be discussed, as well as the traditional Systems Development Life Cycle (SDLC). It will also explain the social psychology of systems development, and explain several schools of thought, which view systems development as a political process, and more social than technical. Finally, this chapter will reflect on the disappointing results of system development failure, and attempt to explain the reasons for such failures. It will attempt to shed some light on factors that should be addressed in order to improve system development.

1.6.3 Chapter Three: Background to Negotiations

This chapter draws the readers' attention to the need for negotiating abilities in the business environment. It furnishes the reader with a clear definition of the term "negotiation" available in the literature. It explains the intricate processes involved in the art of negotiating, the characteristics required of a successful negotiator, the social psychology of negotiating, and equips the reader with several tactics and strategies necessary to be confident at the negotiating table.

1.6.4 Chapter Four: Importance of Negotiations in Systems Development

The relevance of the application of negotiation skills in systems development is explained in this chapter. Systems development can significantly be improved via the use of negotiating abilities.

Current theories or models, which have already been established in both the fields of negotiations and that of systems development, will be reviewed. Furthermore, a framework will be proposed, from the existing literature in the disciplines of systems development as well as that of negotiations, for incorporating negotiation in the SDLC for improved systems development.

1.6.5 Chapter Five: Research Methodology

This chapter will outline the research methodology to be adopted in conducting the empirical research. The chapter will also incorporate the research problem and the research proposition. This chapter will also list the theoretical conjecture developed by the researcher, having as a foundation the existing literature review. Based upon the theoretical conjecture, several empirical hypotheses will be clearly defined, and will be the object of investigation in the research.

1.6.6 Chapter Six: Presentation and Analysis of Evidence

The presentation and analysis of evidence will be reported in this chapter. It will discuss and evaluate the findings of the empirical generalisations derived from the interviews conducted and questionnaires filled in. Any changes required to be made to the proposed framework for improved systems development will be presented in this chapter.

1.6.7 Chapter Seven: Summary, Limitations and Future Research

This is the concluding chapter in which the research will be evaluated against the research objectives and the associated propositions and research problems relating to these objectives. Further, recommendations for system development teams and areas for future research will be discussed, as well as any limitations that might be encountered during the course of the research.

1.7 IMPLICATIONS OF THE RESEARCH

The research is expected to provide some indication of whether negotiating skills are lacking, and whether they are deemed to be necessary skills in system development teams. The research aims to ascertain whether the development life cycle is typically experienced as a process of conflict, and which roles and methodologies specifically experience the most conflict. The empirical results of the research will inspire many development teams to rethink the manner in

which the system development process is managed. Development teams will be able to consider several ways in which to transform the system development process into one which effectively manages conflict, and reduces the unnecessary costs involved with poorly negotiated decisions.

1.8 METHODOLOGY AND LIMITATIONS

The research methodology adopted for the purposes of this investigation was quantitative in approach. Quantitative research is known to be the most objective and quick to conduct. It is well understood and enjoys a high degree of acceptance and status. A questionnaire will be issued to gather data from a population of individuals involved in systems development. The data collected will be analysed using parametric and nonparametric tests, which will support or reject the postulated hypotheses.

The research conducted will be limited in certain respects. Notable limitations that are likely to be experienced are technical emailing issues and respondents feeling insecure about the anonymity of the questionnaire.

1.9 CONCLUSION

This chapter explained the motivation that drove the research. It explained the significance of the research, provided a background of the study, and explained the aims and objectives of the research. Further, it outlined the structure of the report as well as the implications, limitations and prospective research opportunities that may emanate from the study. The ensuing chapter provides a discussion on the varying system development practices available, the roles involved in the SDLC, as well as the social aspects pertaining to the different roles and their responsibilities.

CHAPTER TWO

BACKGROUND TO SYSTEMS DEVELOPMENT

2.1 INTRODUCTION

Information Systems (IS), as a field of academic study, began in the early 1960's (Couger, Davis, Dologite, Feinstein, Gorgone, Jenkins, Kasper, Little, Longnecker and Valacich, 1995). The starting point of the IS field began with the study of what technical systems were, what could be done with them, and what impact they had in the social, organisational and human domains. This focus subsequently shifted to that of organisations. This is primarily because organisations have been the primary context for the deployment of information technology (IT). This led to the field of IS to be concerned with organisational issues. In the 1980's the IS field grew in the direction of strategic management, thus directing the field to address issues concerning how IT is thought about, and used within business organisations. This is in contrast to the traditional view of IS, as simply having a functional purpose (Avgerou and Cornford, 1995).

Different names have been assigned to the study of IS (Couger et al, 1995; Bacon, 1996; Avison, 1996). These include Computer Information Systems, Information Management, Informatika, Information Resource Management and Management Information Systems, to mention a few. This can be attributed to the fact that this relatively new field studies a great breadth of issues and draws from many other established disciplines (Avgerou and Cornford, 1995). Benbasat and Zmud, (2003) are however, concerned that the IS research community is confusing the discipline's central identity by under-investigating phenomena intimately associated with IT-based systems and over-investigating phenomena distantly associated with IT-based systems. They propose that the IT discipline should include studies of the human behaviours reflected within, and induced through the planning, designing, constructing, and implementing of the Systems Development Process. These concerns are addressed by Davis (1986) who explains that IS represents the intersection of six fields of knowledge: computer science, behavioural science, decision science, organisation and management, organisational function and management

accounting. Predominant in IS however, are the studies of computer science, management science and organisation science (Culnan and Swanson, 1986). Evidently much contention encompasses the issue of IS being a discipline in its own right. It is therefore consequential to address the matter in depth.

2.1.1 IS as a discipline?

IS is a field which is characterised not only as a science but also as a non-science (Crossman, 1994). It is a scientific field in that demands exactness (i.e. things need to be done meticulously and in a structured methodology). This exactness is usually the direct result of the technical nature of the discipline. These technical areas of IS can objectively be demonstrated and thus qualify it as an objective scientific field. Crossman (1994) however contends that this is not fully so. There is another group of attributes, which provide the discipline with a dimension that does not display the technical, rational and objective characteristics identified above. These are the non-science characteristics and include:

- argument and disagreement: The IS discipline is typified by waves of argument and disagreement based on opinions about the nature and value of the rapidly evolving technology,
- unstructured vagueness: no clear cut and straight forward solutions in attempting to use the technology in any environment.
- moral and ethical issues: these are included on the count that one party imposes an order on the world of another.

It has further links with disciplines as diverse as engineering, management and social science, making the field multi-disciplinary in nature (Avgerou and Siemer, 1996). Some believe that what is needed is consolidation of diverse frameworks, concepts, methods and approaches in order to bring unity to the field they see as characterised by dispersion and confusion (Banville and Landry, 1989; Bacon, 1996; Grimshaw, 1992), to promote consistent, thorough research and thereby improve understanding and hopefully practice (Grimshaw, 1992).

Perhaps it should be considered that the diversity in conceptions, research approaches, and practice is not a limitation but rather an expression of richness of the phenomena associated with the handling of information and the utilisation of powerful information technologies in what are essentially people-focused and social settings (Avgerou and Cornford, 1995). Roode (1992) adds that there should not be too much concern about the lack of discipline, and that we can indeed pride ourselves in being a fragmented adhocracy. He views it as healthy to continue in many different directions and sees it as an opportunity for growth, rather than as a weakness. It makes the field exciting as it is all about discovery. Avison (1996) also contributes that worrying about IS being a discipline will only constrain the field, its research methods and domains. Focus should rather be turned to contributing to the discipline instead of building paradigms (Banville and Landry, 1989).

Whitley (1989) also cautions that a field is perpetually changing as a result of the actions of inventive and interested human beings. That is why any model that tries to explain the actual state and possible evolution of scientific fields will probably turn out to be inadequate with time or upon intensive usage. Models are merely episodes in history, which come to an end, and eventually become obsolete (Avgerou and Cornford, 1995; Banville and Landry, 1989).

From a business perspective the study of IS is a relatively new subject (Grimshaw, 1992) and the changing business environment demands more than just the ability to solve technical problems (Lee, Trauth and Farwell, 1995). These changing conditions require radical change to business processes to maintain competitive advantage. It is therefore limiting to ignore the benefits that may be derived from other disciplines. For example, Chapman and Nevil (1996) claim that there is a need to consider the value of IS in an organisation at a strategic level because of increasing competition facing most organisations. This implies that it is no longer adequate for the IS professionals who are responsible for design and implementation to be competent only in technology; they must also have an in-depth understanding of the business functions and needs (Lee et al 1995). The lower-level jobs such as data entry, computer operators) are rapidly disappearing and the requirements of the IS professionals are becoming more demanding in many dimensions. These demands include knowledge and skills in technology, management, and interpersonal skills to effectively lead organisational integration and process reengineering

activities (Lee et al 1995; Avison and Nandhakumar, 1995; Work, 1996). Work (1996) adds that students need to be able to be persuasive, to achieve goals, to work with people, and to listen. This is not unique to an IS education, but common to a general education. The same can be said of the qualities of abstraction, induction, analogous reasoning, and the like.

An industry as innovative and progressive as that of IT needs continuous knowledge and skill updating (Couger et al. 1995). Since it is rapidly changing, many academic and practical traditions from other disciplines have been introduced to the field in an attempt to understand it. Such diversity is welcomed as the insight provided by traditional disciplines to this relatively new one, is not only essential but also very healthy. This positive view is predominantly adopted because absorbing from other disciplines allows for growth (Grimshaw, 1992).

In recent years, social and organisational issues concerning IS have been increasingly recognised (Avison, 1996). IS involves technical, personal, organisational, philosophical, linguistic and mathematical issues (Crossman,1994). This is supported by Dahlbom and Mathiassen (1992) who recognise the philosophical, interpersonal abilities demanded by the IS graduate. By recognising that IS is a non-science discipline demands that graduates begin to think holistically: and not confined in the technical dimension. The study of Lee et al (1995) also indicated that these technology trends are likely to lead to different career tracks with differing emphasis on varying skills for IS professionals. The challenge for educators is thus to parallel these diverse career opportunities with business needs.

From this, the overlap between business education and IS education can be noted. It is further illustrated in the evolving organisation, in which a significant amount of emphasis is being placed on training the IS professional as a business manager rather than as a technical expert and on the need to recruit people proficient in business functions (Clark, 1992). Nunamaker, Couger and Davis (1982) recommend a curriculum, which takes into consideration the increased need that exists for information management skills. This, and the need for increased organisational productivity is a major motivation for improved IS and improved education for IS graduates.

IS executives are thus increasingly realising the importance of forming partnerships between industry professionals and academics (McNurlin,1989). Both business and education can benefit from such a relationship in terms of better-educated graduates, and more relevant research. These partnerships allow both parties to keep abreast of technology trends, and business people to understand business better through research, and they also help guide and shape IS education by guiding education to meet business needs (McNurlin, 1989).

The above justifies the application of negotiating within the systems development arena. The importance of this however, cannot fully be understood without first having a succinct understanding of the fundamental principles of systems development. The following section will introduce the basics of systems development, as well as the traditional Systems Development Life Cycle (SDLC).

2.2 BACKGROUND TO SYSTEMS DEVELOPMENT

Many people, with differing skills, are involved in creating computer programs, be it for systems software or application software. This process has been named the systems development life cycle (SDLC). The life cycles' complexity and the steps involved varies, depending on the size of the company, the number of people on the development staff, the size and complexity of the problem that must be solved, and the programmers' skills and experience (Rochester and Rochester, 1991). Whitten, Bentley and Barlow (1994) define the SDLC as a process by which systems analysts, software engineers, programmers, and end-users build information systems and computer applications. It is the structured sequence of operations required to conceive, develop, and make operational a new information system (Szymanski, Szymanski, Morris and Pulschen, 1991). The term cycle stresses that a newly designed system will not last forever; ultimately, it will need replacement, and the development cycle will start again (Szymanski et al, 1991).

A basic principle of systems analysis and design is the recognition of the need for replacement or modification. Reasons to develop new information systems include physical deterioration, technical obsolescence, change in user expectations, accounting practice, outside influences (e.g. mergers and acquisitions) and the arising of new opportunities (Szymanski et al, 1991 and Martin, 1991).

2.2.1 The Systems Development Life Cycle (SDLC)

The information system life cycle is the life span of an information system, from its inception to its removal or redesign (Szymanski et al, 1991; Martin, 1991). Four stages exist in the life of any system. The first phase is development, the second phase is growth. The third is maturity and finally a system reaches its last stage-deterioration (Martin, 1991). Szymanski et al (1991) explain that in these phases, systems physically undergo the following stages: analysis, design, implementation and maintenance.

- *System analysis* includes problem definition, analysis of requirements, and project justification.
- *System design* includes logical system design and physical system design. In the design stage, a new information system is conceived and built to the specifications of the users.
- *System implementation* includes testing, installation, and training. In the implementation stage, the designed system is introduced into the workplace as a completely new system or as a replacement for an unsatisfactory system. As new systems are rarely perfect, and flaws need to be corrected until the system operated properly.
- *Maintenance* requires that the system is continually monitored and adjusted as needed until time for a total re-evaluation (Szymanski et al, 1991).

In general the SDLC is comprised of the following steps according to Rochester and Rochester, (1991):

- Analysis: identifying and defining the problem
- Design: planning the solution to the problem
- Coding: writing the program
- Debugging: correcting program errors
- Testing and Acceptance: making sure the system works properly and turning it over to the users
- Maintenance: keeping systems working properly and improving them when necessary and
- Documentation: writing software, user and reference documentation.

Whitten et al. (1994) depict five stages in the SDLC. These are shown in the following diagram:

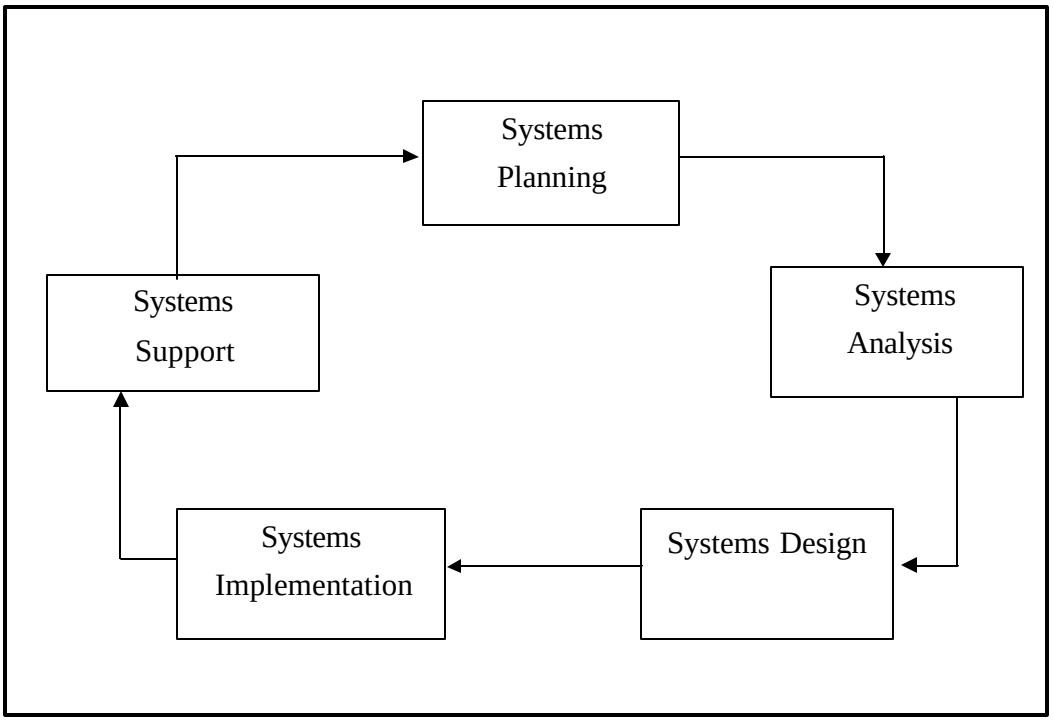


Figure 1 Systems Development Life Cycle (Whitten et al, 1994: 82)

This model presented by Whitten et al (1994) is supported by a number of authors (see for instance Szymanski et al (1991); Finkelstein (1989); Martin (1991); Alter (1992) and Hagelstein, MacDonald, Olle, Rolland, Van Assche and Verrijn-Stuart (1991). It can be explained as follows:

Systems Planning:

The scope of business planning can extend to the entire business, a division, or an organisational unit. The purpose is to identify and prioritise those information systems applications whole development would benefit the business as a whole.

Systems Analysis:

According to Szymanski et al. (1991), System Analysis is threefold. It involves identifying a system problem or new opportunity, analysing the current system in light of the problem or new opportunity, and justifying the development of a new system or modification of an old system to

meet the needs of users. The following is required at analysis phase according to (Szymanski et al, 1991):

- **Problem Definition**: The first stage in systems analysis. It is initiated by recognition of a problem or new opportunity that the current IS cannot handle. Problem definition should carefully gather the facts to determine the nature, scope and seriousness of any alleged problem with an IS;
- **Requirements Analysis**: In this stage, a systems analyst determined how the present IS performs, how the best possible system might perform, and what new system might bridge the gap between the two performance levels. A system analyst uses many graphical tools to describe a system, an typically interviews a number of IS users;
- **Project Justification**: In this stage the analyst systemically compares alternative IS's and decides which of the two to propose to management. It is a critical stage because it will end with the approval or rejection of management. Thus, the SDLC could be aborted at this stage. The project justification stage includes cost/benefit analysis of alternate systems, selection of the best system, preparation of a system study for submission to management, and management's final go or no-go decision.

At this stage it is important that analysts consider the following:

- the computer system is supposed to further the aims of the organisation installing it
- the computer system must be fitted into the working lives of the people in the organisation that are going to use it
- the individuals concerned must relate to the machine in terms of operating it and using the output from it
- the IS processing function of the system is to perform and
- the technical specification of the computer system (Avison and Taylor, 1997).

The purpose is therefore to analyse the business problem or situation, and then to define the business requirements for a new or improved information system (Whitten et al, 1994). If a problem or new opportunity is not correctly analysed, the resulting IS may be useless or even detrimental to an organisation (Szymanski et al, 1991).

This stage is not as simple as it appears however. Schach (1990) claims that in this stage most frequent problems arise with users not being able to correctly specify their needs. One way in which this problem can be rectified is by prototyping, that is, constructing a working model of the product with which the client can experiment.

A further approach to systems analysis documented by Nunamaker (1992) is that of JAD, a facilitated, structured meeting process in which users, analysts and managers are brought together in a meeting room for a series of intensive sessions. In these sessions, systems, which will be used by the users, are planned, defined, and reviewed. This is contrasted with the traditional systems analysis process , in which analysts conduct a series of one-to-one interviews with users and managers over long periods of time. JAD was created and developed by IBM in the early 80's to accelerate the systems development process and to improve the quality of resulting systems. The theory is that if users are allowed take such an active part in systems design, then analysts are able to better define the systems from the perspective of the user's needs, and the users themselves will take ownership of the systems. JAD sessions are increasingly becoming more popular, throughout the SDLC in a large number of large organisations (Nunamaker, 1992). Despite their apparent success, JAD sessions suffer from many of the same limitations as other group meetings: dominant personalities, introvert personalities, and politics, which exist amongst superiors and subordinates (Nunamaker, 1992).

Systems Design:

The purpose of this stage is to design a computer-based, technical solution that meets the business requirements as specified in systems analysis. Szymanski et al. (1991) explain that systems design comprises of logical design as well as physical design. The logical design phase shows the flow of data through an information system. It can be thought of as the information system blueprint. It is a series of charts, graphs, and data layouts that describe the new information system in detail. The physical design stage serves to convert the system blueprint into the specific detail required by programmers to develop the computer codes that transform the logical design into a working information system. The following is required at System Design phase:

- **Logical Design Stage:** Requires careful planning because the remaining stages in the SDLC are dependant on the logical design stage. This phase shows the flow of data through a IS. It can be thought of as the IS blueprint. It is a series of charts, graphs, and data layouts that describe the new IS in detail (Szymanski et al, 1991).
- **Physical design Stage:** its purpose is to convert the system blueprint into the specific detail required by programmers to develop the computer codes that transform the logical design into a working IS. Coding a program involves actually writing the instruction in a particular programming language to tell the computer how to operate (Szymanski et al, 1991).

Systems Implementation:

The scope of systems implementation is defined by the technology-related components of the information systems application that was designed in the previous phase. The purpose is to construct/assemble the technical components and deliver the new or improved information system into operation. Szymanski et al. (1991) add that this phase of the SDLC includes testing, installation, and training steps.

- **Testing Stage**: Testing is one of the most important activities in the SDLC primarily due to the fact that huge expenditures are incurred in the development of IS's. It is therefore critical to the success of an organisation that a system should not be handed over to users without thorough testing. The testing stage ensures that the IS is as free of errors as possible in order to instil confidence and acceptance by the users, (Szymanski et al, 1991).
- **Installation Stage**: In installation, a system is made operational and is put to work. This is a significant component in the development of an IS, and it may require considerable capital to support , and it may require considerable capital to support both people and equipment. In some cases, the cost of installation exceeds the cost of system design. Installation involves system conversion (i.e. replacing an existing system with a new IS). Conversion may be direct, parallel, phased in or pilot. Direct requires the sudden removal of the old system and replacement with the new one. Though it is economical, it involves the greatest risk. Parallel involves the simultaneous use of both systems for a

period of time until the older one is not used a all. Phased-in requires that the new IS is installed in phases or segments. Pilot conversion is safest and most economical. It involves the installation of the new system in a different location and is tried her before it is installed in other locations (Szymanski et al, 1991).

- **Training**: involves familiarising the users (users, operators, and management) with the system (Szymanski et al, 1991).

Systems Support:

The scope of systems support is to support the produced information system delivered from systems implementation. The purpose of this stage is to sustain and maintain the system for the remainder of its useful life. IS's are maintained by a special group of programmers known as maintenance programmers. After an IS is installed, it is handed over to maintenance programmers. The maintenance of a system may span several years, during which time the changing requirements of users lead to minor modifications to the system. Eventually the system reaches a point where routine maintenance is no longer sufficient and the SDLC begins again (Szymanski et al, 1991).

The above phases within the SDLC, can be practised in a variety of manners, resulting in completely different approaches to tackling system development projects. Each provide both benefits as well as drawbacks to the end system delivery. A classification of these methodologies follows.

2.2.2 The History of Development Tools

Avison and Taylor (1997) define an IS development methodology as a system of procedures, techniques, tools and documentation aids, usually based on some philosophical view, which help the system developers in their efforts to implement a new IS. Many different development methodologies exist. Despite this fact, many IS's are developed without the use of a standard IS development methodology. This is due in part to the inappropriateness of some methodologies in some situations so that, even in one organisation, a standard approach may not be used in all situations.

Martin (1991) presents a history of development tools:

- *Traditional Approach*: Early systems development included a long, narrative, technical specification document as a product of the systems specification stage. The user was expected to read this document, make any necessary changes, and then to sign off. Most users did not have the time, capability or desire to read such a document. Most would sign off without understanding how the systems specifications had been defined. Some tried to read the document and then spent hours trying to understand and adjust the system. Neither approach was effective. Because user understanding of the proposed system was inaccurate or partial, the resulting system was frequently far from what the user wanted or expected. The incorrect system was then subjected to many undocumented alterations, which led to difficulty in maintaining the system. Many systems never made it into production because of grossly incorrect specifications.

- *Structured Approach*: Systems became more complex. They required thousands of line of code, dozens of programmers, and input from several different end-users. Communication problems compounded. By the 1970's, many graphic-oriented tools became available to combat problems associated with these earlier approaches. Introduction of these tools has been called the structured revolution. The goals of structured tools are to allow a top-down approach to system development, enhance communication, and simplify the maintenance process. In the top-down approach, the system is defined first at a general, overview level. Then it undergoes successive refinement until the bottom, primitive-level functions are clearly defined. Primitive level is the point where specifications can be translated on a one-per-one basis into lines of programming code. Thus, a system is decomposed into small, cohesive, loosely coupled program modules that perform simple, understandable tasks. These modules should be independent as possible so that maintenance programmers can make changes to a single, simple module and not have to worry about creating errors in other modules.

- *Radical Top-Down Approach*: Introduction of top-down, successive refinement of the system allowed a different approach to the SDLC. The feasibility phase and the

requirements analysis phase still had to be completed in a sequential fashion. However, once the system specification phase was reached, it was possible to begin an iterative cycling though the next phases. The top level (executive module) could be designed, coded, tested, and implemented without developing the full system. The next level could go through the cycle and so on until the entire system was completed, allowing for partial development of the system. Thus a portion of the system can be functional before the total system is developed.

Organisations need to experiment with these approaches and evaluate which work effectively for the projects at hand, taking into consideration the team's competencies as well as dynamics. Two methodologies, however, have been noted to be the most widely used. These are the structured systems development methodology and the prototyping methodology.

2.2.3 Structured Systems Development vs. Prototyping

Structured Systems Development and Prototyping are two contending development methodologies, which present two major schools of thought. Between these extremes, there are many mixed approaches (Shoval and Pliskin, 1988).

A prototype IS is defined as a working IS that is built economically and quickly, with the intention of it being modified. In the systems analysis phase, prototyping is used to identify what undecided users really want in an IS. In the system design phase, a system analyst uses a prototype for varied reasons (user uncertainty, early user training etc) (Szymanski et al, 1991). Szymanski et al (1991) suggest that typical prototyping efforts might follow the following steps:

- a business user identifies the need for a new IS
- the user communicates that need to the prototype, who is a systems expert in the design of quick, cheap systems that a user can change easily to accommodate specific needs
- the prototyper uses fourth-generation software on a microcomputer to quickly design a model that the user can experiment with

- the user suggests changes to the first version of the prototype. The changes are made, and the user experiments with the second version. More changes are added, and more versions of the prototype are quickly produced
- finally, the user likes the prototype and that model becomes the working blueprint from which the new IS sill be developed

In prototyping software systems, only parts of a system are developed. In essence, prototyping builds a model of the final software system. Emphasis is on user interfaces such as menus, screens, reports and source documents. The final system is either built from scratch using the prototype as a model, or it evolves from the prototype (Martin, 1991).

The focus of prototyping is on user involvement in the software development process. In the traditional SDLC, analysts spend time interviewing users early in the life cycle to determine their information needs. Analysts then go off in isolation to develop the system. Users seldom are contacted again until the new system is delivered. Often the resulting system doesn't satisfy users, which is not surprising, since users had little to say about most of the development process.

Prototyping is thus favoured in many ways to the traditional SDLC approach. According to Martin (1991):

(a) it is difficult for users to know what they need before they have hands-on use of some version of the system
(b) narrative descriptions of an application do not adequately communicate the reality and dynamics of a system to users
(c) the larger the development team, the more difficult the task of communication becomes
(d) language barriers and sheer lack of time inhibited the ability of all members of the team to have a common understanding of the system being developed
(e) systems developed in the traditional manner may function correctly, but often they are difficult to learn and use

(f) the traditional approach emphasises documentation, which is time consuming and seldom decreases communication problems
(g) because of their scope and complexity, systems require many months to complete. The traditional approach does not shorten delivery time, but increases it due to documentation time
(h) traditional approaches deliver costly systems that are ultimately not pleasing to the users

Schach (1990) supports prototyping by saying that there is no "silver bullet" to systems development and that indeed the hardest part of systems development is in the requirements, specifications and design phases. Schach (1990) recommends the prototype or incremental system building approach, which allows the developer to build the system in stages and not as a whole. Prototyping thus provides hands-on communication throughout the development process. It is thus used as a communication tool to assess and meet user information needs (Martin, 1991).

Dearnley and Mayhew agree that building and utilising system prototypes paves the way for quicker and more efficient system development while at the same time encouraging the creation of better-fit systems. Both are important steps towards relieving the applications backlog. Prototypes are used as part of a mutual learning process for the user and analyst, thus diminishing the possibilities of a communications problem. For these reasons, prototyping should be integrated into the systems development cycle (Dearnley and Mayhew, 1983).

Shoval and Pliskin (1988) contend however, that despite the numerous attractive benefits of the prototyping approach, any form of prototyping is difficult to implement for large system because of its implied lack of structure.

A final methodology that emanated from the prototyping approach gave rise to the Joint Application Development (JAD) technique, which places emphasis on people and on user involvement. It is a highly structured workshop that brings together users, managers, and IS specialists to jointly define and specify user requirements, technical options, and external designs. The "D" in the original acronym referred to design, however it was much more oriented to supporting systems analysis phases, especially requirements stages. Because of the recent

emphasis that is placed on user involvement throughout the life cycle, it is now referred to as development. JAD attempts to solicit greater user and management participation in the systems development life cycle (Whitten et al, 1994).

There are numerous benefits of this increased participation:

- relationship improvements between participants
- improved computer literacy of participants
- responsibility of conflict resolution is placed where it belongs (on both users and management)
- improved timeous system delivery
- lower costs by fitting requirements correctly specified
- greater systems value and user/management satisfaction
- confidence and support and finally
- lowered maintenance costs.

The variety of methodologies available present system development leaders with the dilemma of which to apply in their development environment. The discussion that follows, will provide a rough guide as to the which methodology to select.

2.2.4 Choosing an Approach

The reason for the current turmoil in systems analysis is the emergence over the past few years of a number of new approaches or methodologies (Wood-Harper and Fitzgerald, 1982 and Paddock, 1986). While the traditional approach and descriptive tools still dominate IS development, socio-technical approaches and normative tools are gaining favour (Paddock, 1986).

One single methodology cannot cover the whole range of system tasks (Benyon and Skidmore, 1987, Mahmood, 1987 and Avison and Wood-Harper, 1991). The varieties of approaches available to the analyst have been seen as alternative views of reality. The task of the analyst is thus to successfully match an appropriate view –sometimes a mix of several views – contingent on variables in an around the problem situation. This involves taking account of many factors

including the analyst himself, the problem owner and environment within which the problem lies (Episkopou and Wood-Harper, 1986).

Avison and Taylor (1997) thus identified several types of situations and attempt to match these types of situations with IS development approaches. These include:

- *Well-structured problem situations with a well defined problem and clear requirements.* The appropriate methodologies for these situations include methodologies based on the traditional systems development life cycle (SDLC), frequently referred to as the waterfall model. It is also known as the hard systems approach, in that stress is placed on the technical aspects of IS's, and assumptions is made that the requirements are easy to communicate to system developers. The requirements need to be well known and understood and easily communicated. Users are only given a limited say in the decision making and analysts are not expected to question why a system should be developed or its objectives as the new computer system is expected to reflect the status quo.

- *Well-structured problems situations with clear objectives but uncertain user requirements.* Methodologies such as those based on data modelling, process modelling or prototyping are likely to be appropriate for these situations and No assumption is made that the requirements are easy to communicate to stem developers, thus allowing for more ambitious computer applications than those feasible using the approaches of class 1. Prototyping plays a role here as well.

- *Unstructured problem situations with unclear objectives*. Soft system approaches, in which the perspectives of these involved are stressed, are likely to be appropriate in these situations.

- *Situations where there is a high user interaction with the systems.* These situations require approaches that stress the needs of the people who interact with the system. Socio-technical approaches will be most appropriate in these situations.

These different scenarios have encouraged the development of the Multiview as an exploration in IS development. It provides a framework guiding analysts in their choice of techniques and tools in any particular problem situation listed above and also recommends documentation and other standards, those being one of the main forces for using and IS development methodology in the first place. The Multiview has five phases: (1) analysis of the human activity system, (2) analysis of the information (entities and functions), (3) analysis and design of the socio-technical systems, (4) design of the human-computer interface and (5) design of the technical aspects.

As projects take on different characteristics as the project progresses, it is no longer feasible to adopt only one particular approach. One view is that the above different methodologies are complementary. Another is that system analysts may not know a number of approaches very well, and in complex situations, a single methodology is more appropriate. Another view is that every situation is different and the analyst should have the opportunity to explore and create a unique method for each situation. Complex problem situations may consist of two or more of the problems situations listed above, requiring a contingency approach to IS development.

Reimus (1997) explains that despite the simplicity and straightforwardness of the SDLC, and also the variety of development methodology tools available, it is very intriguing to learn of the great failure that revolves around systems development. It thus becomes a pertinent question to ask what can be done to improve systems development. In order to answer this question it is necessary to first reflect on the social significance of systems development, and consider whether systems development can at all be improved by exploring this realm of social thinking.

2.3 THE SOCIAL PSYCHOLOGY OF INFORMATION SYSTEMS

The alternative approaches towards systems design discussed earlier are based on fundamentally different sets of assumptions or theories (Hirschheim and Klein, 1989). The central debate revolves around the fact that that these assumptions or theories are competing and at times, conflicting, and more often than not, have a significant impact on system designs (Dagwell and Weber, 1983). Hirschheim and Klein (1989) suggest that the ways in which system objectives are established are directly related to the development approach adopted and that important social consequences result from applying a particular systems development approach. It is

therefore crucial that system developers question these very assumptions before embarking on system projects, knowing that their assumptions have full impact on the organisation in a social dimension.

Four paradigms (schools of thought) based on the assumptions adopted by system developers include: Functionalism; Social Relativism; Radical Structuralism and Neohumanism. These paradigms are merely extensions of the established critical social theory. Critical social theory can be thought of broadly as covering the interactions between the explanatory, the normative and the ideological dimensions of social and political thought. More specifically, if 'social theory' is used as a generic term to describe the attempt to theorise the modern social world in any of its spheres (the psychological, the cultural, the economic, the legal, or the political), then 'critical social theory' means firstly, social theory which is capable of taking a critical stance towards itself, by recognising its own presuppositions and its own role in the social world, and secondly, social theory which takes a critical stance towards the social reality that it investigates, by providing grounds for the justification and criticism of the institutions, practices and mentalities that make up that reality (Centre for Critical Social Theory, 1997). This is precisely what Hirschheim and Klein achieved in depicting the four paradigms. They will be discussed in depth below.

2.3.1 The Four Paradigms of Hirschheim and Klein (1989)

Burrell and Morgan (1979) believe that the four paradigms (Functionalism; Social Relativism; Radical Structuralism and Neohumanism) are mutually exclusive. They offer alternative views of social reality, and to understand the nature of all four is to understand four different views of society. A synthesis is not possible, since they are different alternatives in which one can operate sequentially over time, but not in more than one paradigm at any given point in time, since in accepting the assumption of one, the assumptions of all the others are defied. A brief explanation of each follows.

1) Functionalism

The functionalist paradigm seeks to provide essentially rational explanations for social affairs (Burrell and Morgan, 1979; Hirschheim and Klein, 1989). The two essential assumptions are that:

- there exists an objective empirical reality about systems development and positivistic methods are the best way to make sense of it; and,
- the nature of the social world is best conceived in terms of an integrated order rather than conflict.

Hirschheim and Klein (1989) however argued that functionalism has not been a particularly successful paradigm for understanding organisational and societal life, as the subject of study – the people – does not lend itself to study through these objective, positivistic means.

Further, the positivist approach allows systems objectives to be derived in an objective, verifiable and rational manner. Systems design therefore becomes primarily a technical process. The fundamental assumption made in the positivistic approach, according to Dahlbom and Mathiassen (1993) is that systems development itself is a rational activity. In other words, it chooses a rational mode of operation – to analyse and think, and then to make a decision and finally to act.

Requirements specification and systems development methods are traditionally expressions of the positivistic notion of knowledge. Requirements specifications are the result of collecting facts about present activities and needs in combination with facts about technological possibilities. Often these requirements constitute the key part of a contract to be used to control and evaluate the development effort and the resulting computer systems. Systems development methods are generalisations based on previous development efforts and theoretical constructs. They are documented in books, supported by various tools, and distributed from the authors to be used by a great number of system developers in different organizations.

Five primary ideas of positivism are identified as:

- *objective observation*: this involves objective detachment. As a neutral observer, risks of biasedness are minimised. The underlying theory is that science becomes possible only when what is being investigated is separated from the developer. This is what is primarily known as "breakthrough by breakdown".
- *explanation and prediction*: these are primary aims of science, according to positivism. An event can be explained by pointing to its cause, and a future can be predicted by observing its cause. To be able to predict and explain, causal laws must be collected so that it is known what causes go with what effects.
- *general knowledge*: positivists are interested in collecting empirical laws that can serve as future basis for action in all circumstances that are similar enough. Positivists do not care for the particular object under study, viewing this object instead as an instance, a test case to be used elsewhere.
- *hypothesis testing*: To make sure what is being tested is understood, positivists formulate their ideas as exactly as possible. Mathematics being their ideally exact language, positivists prefer to put ideas in a mathematical form. Ideas that cannot be formulated by the use of mathematics and properties that are not quantifiable, become suspect and are irrational.
- *physicalism*: This is the need of a positivist to reduce everything to a statement in physics.

From this one can infer that the positivistic approach is specification driven. The problem is described and analysed in a requirements specification. System developers use specifications as means of remembering and communicating their thinking, and the task is seen as a transformation of specifications from a general problem-oriented level to a concrete machine-oriented level. In performing these transformations, system developers use stepwise refinement in combination with structured techniques. Abstraction is used to focus attention on relevant information, and decomposition is used to structure understanding and create sequentially smaller sub-problems. Each of the detailed sub-problems are then solved and aggregated into the final solution. Systems developers therefore need to be rational thinkers in order to solve

abstract, complex problems. They have to deal with large amounts of information and thus require an analytical mind.

Users play a somewhat passive role in such a process. They are, at most, objects in a process of requirements engineering, being interviewed in order to supply systems developers with a definition of the problem and the relevant information. All the creative thinking is done by the systems developers as they produce specifications and find solutions without actively involving the future users. The role of the user is to provide information and approve decisions. The aim of the systems development effort is the production of a high quality system that meets the specific requirements. The result of the process is a computer system that is subsequently delivered to the users. The actual implementation of the system into an existing technological and organisational environment is not considered part of the development task.

Further evidence by Willcocks (1991) supports the premise that traditional design and development techniques, with technical design considerations and the skills and perspectives of systems professionals dominant, tend to drive computerisation processes. The impact has been very restricted forms of end-user participation, despite the immense lip service often paid to the latter.

2) Social Relativism

Social Relativism is the paradigm adopted for understanding social experiences and is primarily involved in explaining the social world from the viewpoint of the organisational agents (users, managers or stakeholders) who directly take part in the process of interpreting reality (Dahlbom and Mathiassen, 1993).

The paradigm recognises that knowledge about human means and ends is not easily obtained because reality is exceedingly intricate and elusive. There is no single reality, only different perceptions of it. Business does not deal with an objective economic reality, but one that evolves through changing traditions – social laws, conventions, cultural norms and attitudes (Hirschheim and Klein, 1989). The paradigm holds that any system that meets with the approval of the organisational agents is legitimate. It aims to achieve consensus and acceptance. This can only

be achieved via continuous interaction among all parties. Only through interaction and through continuous modification do objectives emerge. The mechanism of prototyping or evolutionary learning from interaction with partial implementations is the way technology becomes embedded into the social perception and sense-making process.

3) Radical Structuralism

This paradigm emphasises the need to surpass the limitations placed on existing social and organisational arrangements. The focus is primarily on the structure and analysis of economic power relationships (Hirschheim and Klein, 1989). The approach differs from social relativism in that it assumes that a fundamental social conflict is intrinsic to society, yet it agrees with functionalism in that there is an objective economic reality. The conflict allegedly exists between the interests of those who own the sources of production (shareholders of organisation) and labour. Economic reality is explained in terms of the conflict between these two social classes. The conflict results from the objective condition of private ownership and contends that the invention of economic laws is a ploy by the owners of the sources of production to make the working class believe that there is no alternative way to arrange working conditions. Management has sided with the owners and are mere agents of their interests.

The developer is therefore faced with a choice in this approach: to side with management and become their agent, or join the interests of labour. In choosing to support management, the developer will direct systems understanding against the workers' interests, thus affecting the intensity of work, changing the instruments of work, or replacing the object of work altogether. Systems development in the interests of management increases intensity of work by using computers to direct the workflow or supervise workers. The unfortunate result is that of loss of jobs, decreased dependence of management on labour, de-skilling of jobs by increased specialisation or standardisation, and so forth. It is for this reason that the developer chooses to support the agent, thus engaging in conflicting interests.

4) Neohumanism

This paradigm seeks radical change and emancipation. It stresses the role that different social and organisational forces play in understanding change, and focuses on all forms of barriers to

emancipation – in particular ideology (distorted communication), power, and psychological compulsions and social constraints, and seeks ways to overcome them (Hirschheim and Klein, 1989).

This approach is hypothetical to a large degree in that it has been constructed from theory. The concepts of work, mutual understanding and emancipation are the three fundamental domains around which society and other forms of social organisation are arranged. Hermeneutics, derived from the Greek word "hermeneuo" which means to interpret, evolved to facilitate these fundamental domains. Hermeneutics is defined as the study of principles that can be applied to make sense of situations that are difficult to interpret. It helps in understanding the barriers and limitations involved in improving the quality of the human condition in the direction of maximal freedom from physiological needs and social domination. The removal of these barriers is achieved through emancipation: the ability of the system developer to elicit (through interaction) a shared understanding of the many obstacles to human communication. The developer needs to acquire an appreciation (inside knowledge) of the different viewpoints and existential situations of the different stakeholder groupings. This can only be done by genuine participation.

2.3.2 Three Paradigms of Dahlbom and Mathiasen

Dahlbom and Mathiassen (1993) present three further paradigms for the development of computer systems: construction, evolution and intervention, each of them providing a different perception of the task and the strategies to be used. Again, these three paradigms are not to be understood as exclusive alternatives but rather as idealised viewpoints to be combined, to improve understanding and development approaches.

1) Construction

The view adopted by construction thinkers is that the design of computer systems involves skilled handling of complexity. It requires an analysis of the problem and decision on a problem-solving strategy for the program. From there, the development occurs in a stepwise fashion, using the evolving structure of the program to structure the process of constructing the program.

The construction process is specification driven. The problem is described and analysed in a requirements specification. System developers use specifications as means of remembering and communicating their thinking, and the task is seen as a transformation of specifications from a general problem-oriented level to a concrete machine-oriented level. In performing these transformations, system developers use stepwise refinement in combination with structured techniques. Abstraction is used to focus attention on relevant information, and decomposition is used to structure understanding and create smaller and smaller sub-problems. Each of the detailed sub-problems are then solved and aggregated into the final solution. Systems developers therefore need to be rational thinkers in order to solve abstract, complex problems. They have to deal with large amounts of information and thus require an analytical mind.

2) Evolution

Real problems are difficult to solve because they are unclear, elusive, and also subject to the influence of change. This suggests an experiential rather than an analytical approach to systems development.

The approach of evolution begins with a specification group developing a requirements specification and later an overall design specification. Both specifications are subjected to thorough reviews before the technical design, programming, and implementation of the system begin. The prototyping groups begin by developing a prototype. The prototype is evaluated by reviewers, who provide feedback on errors, point out shortcomings, and suggest modifications. On this point it should be mentioned that errors in this approach are not viewed as mistakes, but fundamental building blocks in the systems development process. The evaluated prototypes are then used as a basis for implementation. The critical concern in the evolutionary approach is that the context of the system is included together with the individual interpretations of different users.

3) Intervention

Conflict and contradictions is what is required when developing information systems in the environment of the interventionist, for the central reason that these instigate change. Different agents within the organisation have different interpretations of events and even conflicting

interests, giving rise to different interpretations of events and proposals for change. They engage in complex power struggles and play organisational games that are difficult for an outsider to identify and understand.

Conflicts and contradictions arise spuriously within the project group itself, due to project uncertainty, unclear project aims, different interests in the group, lack of experience in dealing with difficult organisational problems and so on. There are contradictions between the aims of the project and the available resources, including the competence of the project group, particularly as the aims undergo changes. There are contradictions between the project group and the users and between different user groups in relation to the project aims. Often these contradictions are treated as obstacles that disturb the systems development process. But the interventionist takes these contradictions seriously, treating them as opportunities rather than as grievances.

2.3.3 Hard and Soft Systems Thinking and the Dialectical Approach

Systems development is the business of constructing computer systems for the use of human beings in receiving, processing, storing and communicating information. There are however, as mentioned, many approaches to system development. Dahlbom and Mathiassen's (1993) hard systems approach emphasises clear, exact, and true representations of the world. The soft systems approach pursues the idea that there are always several, equally plausible perspectives of the world. Finally, the dialectical systems approach is based on the idea that to understand, explain, and make change we must think in terms of conflict and contradictions. These three approaches encompass the two sets of paradigms discussed earlier. Having said this, it now becomes an easier task to clarify the similarities and differences between the two sets of paradigms under these umbrella-headings.

1) Hard Systems Thinking:

For thinkers of this school of thought, a system is typically a functional system, a machine with a determinate function. These thinkers ask what things do, thus abstracting from all properties that are functionally irrelevant and reducing the complexity. In this approach the assumption is that reality is an ordered, stable system. The role of the systems developer is to map reality and to

ensure the truthfulness, consistency, completeness, and implementation of the system. Both the functionalistic and constructionist approaches fall into the realm of hard systems thinking.

Both approaches have several qualifications in favour of their use. They allow the developer to take on a neutral and objective stance in the design of the system as well as allow him to be independent of issues of power, authority, conflicting interests and goals. Through the concept of economic requirements, economic reality (translated into quantitative, financial goals, and systems performance characteristics) allows system objectives to be derived in an objective, verifiable and rational way. Systems design becomes primarily a technical process with the primary objective being profit maximisation. The approach allows for the economising of resources and the reaching of optimal solutions. The idea is that thinking beforehand of alternatives is quicker and more prudent than trying them out in practice. Successful rational action however, requires that a number of actions be fulfilled. The goal or problem has to be stable and explicitly stated. Developers must have information about alternative ways to reach the goal or solve the problem and also must be able to measure and compare the consequences of each option. Finally, they must be committed to solve the problem and have the resources necessary to do so. The approach is seen to encourage clarity and comprehensibility, and is widely acceptable to the community at large. Moreover, it helps operationalise fuzzy issues and directs efforts to finding productive technical solutions (Dahlbom and Mathiassen, 1993).

Davenport (1994) criticises this technical approach to information planning, however, as overshadowing a human-centered view of IS development, which fails to encompass all of a company's information, and ultimately undercuts business change. He criticises the technicians for having lost the objective of business change in the details of modelling.

A further disadvantage to such an approach is that the developer assumes that there are general laws or regular patterns that help to explain and predict reality (Hirschheim and Klein, 1989). This approach in Dahlbom and Mathiassen's (1993) view simplifies a complex reality, making organisational life more rational. In reality, the problems encountered when constructing computer systems are often mathematically trivial and solutions are far from simple and clear.

Further, the primary emphasis on investigating means rather than ends, is a considerable drawback. There is an implicit assumption that objectives are agreed. But in reality, objectives (ends) are controversial and the subject of considerable disagreement and debate. By assuming the system objectives are agreed, legitimisation can become an issue of use or misuse of power, resulting in pre-specified ends meeting the needs of certain system stakeholders at the expense of others.

A final disadvantage noted by Dahlbom and Mathiassen (1993) is that system developers know that computers are not the solution to every organisational problem. They deal only with explicitly stated data processing problems to which they apply a set of standard techniques to find an optimal computer solution. The construction of computer systems is largely a matter of routine as well. Excitement comes from the complexity of the task, the prestige of working with high technology, and the impression of being at the heart of progress. Furthermore, the approach does not always allow for creative discoveries. It is inflexible.

2) Soft Systems Thinking:

Soft systems thinkers assume that the world is shaped by our experience of it. We see different things, have different perspectives, structure the world differently, depending on interests, background, education and culture. The method adopted by soft systems thinkers is that of interpretation. This approach encourages the consideration of different perspectives and expressions. It holds that to improve the way work is organised, systems development groups should not simply rely on the abstract system that is expressed in the standard project but should compare this system to the beliefs and attitudes of the project members and learn from the differences between the ideal world of the project model and the experiences and ideas in the projects.

Soft systems thinking provides us with a rich and realistic approach to learning and change, but it is difficult to plan and manage. It is achieved at the expense of a complex and uncertain process, requiring substantial experience and professionalism by its practitioners (Dahlbom and Mathiassen, 1993). The social relativism, radical structuralism and evolutionary approaches fall in the category of soft system approaches.

In line with the soft systems view, and without which the discussion remains incomplete, is the hermeneutics attitude to systems development. In hermeneutics there is an interest in understanding actions or their products, not in explaining or predicting events. To understand an action, the action must be interpreted, and it must be determined what action it was and why it was performed with what intention.

Hermeneutics with its ideas about interpretation, about subjective understanding, participation, the uniqueness of situations and dialectics is a powerful alternative to the positivistic view of knowledge. Against the positivistic method of detached observation, hermeneutics contrasts the idea of gaining knowledge by subjective participation. With positivism, the scientist is an outsider. He/she is an expert who collects information about people, if possible without revealing either that they are subject to investigation and for the reason for the investigation taking place. For the hermeneutic, knowledge is not a commodity to be collected under controlled conditions, to be bought and sold on a market; knowledge is subjective enlightenment and edification, difficult but possible to share, provided there is mutual respect and sincere attempt at understanding.

Believing that every situation is unique, hermeneutics do not really believe in general knowledge, and complain about the necessarily superficial nature of such knowledge. In contrast, hermeneutics want to stress the importance of understanding the world in all its richness and variety, of appreciating the abnormal and exceptional as keys to an understanding of the normal.

Hermeneutics stress the importance of participation. Only by participating in a social process will they be able to understand what is really going on. There is no way what goes on in an organization can be learnt, unless analysts communicate with its members, preferably becoming members of the organization themselves. They, in effect, take on the dialectic approach to uncovering the systems requirements.

In this way, hermeneutics make users pay more attention to the complexities of task requirements definition. Systems developers should engage in dialogues with users and clients. They should interpret their professional languages to appreciate both the routines and

irregularities involved in performing the relevant tasks in the user organisation. From this perspective, requirements specifications and systems development methods will not seem very important. It is the process of creating the requirements specifications and the process of interpreting and changing it that is important. The quality of the process depends on how well the analysts understand the present procedures, the needs and ideas of the users, and the ways in which computer technology can be used to improve the situation. It also depends on how well the users see and understand the process and how well analysts communicate and interact. Systems development practices and methods are of little importance. It is the personal understanding and insights of the systems analysts that determine the quality of the work. They cannot improve their competence simply by studying new methods, reading books or attending seminars.

The approach of the hermeneutic begins with a specification group developing a requirements specification and later an overall design specification. Both specifications are subjected to thorough reviews before the technical design, programming, and implementation of the system begins. The prototyping groups begin by developing a prototype. Reviewers, who provide feedback on errors, point out shortcomings, and suggest modifications, evaluate the prototype. On this point it should be mentioned that errors in this approach are not viewed as mistakes, but fundamental building blocks in the systems development process. The evaluated prototypes are then used as a basis for implementation. The critical concern in the hermeneutic approach is that the context of the system is included together with the individual interpretations of different users.

System developers are strongly dependent on problem owners and future users. They acknowledge that users play an active role in evaluating design proposals and prototypes, and problem owners are needed to negotiate and make decisions regarding the problem formulation and the quality of the produced system. In the hermeneutic approach, system developers are still technical experts but rather than being able to construct the best solution by themselves, they have to become teachers and facilitators as well. They propose and develop technical solutions, but throughout the development process they communicate and interact with problem owners and users. They engage them in evaluating alternatives and making decisions.

Throughout the literature, the importance of communication is persistently stressed. This is because participating system developers must be able to establish and manage effective cooperation, and communication with users and among themselves (Dahlbom and Mathiassen, 1993; Luhmann, 1996).

Du Plessis, Rip and Lay (1990) also emphasise this point. Ideally the statement of requirements, also referred to as the requirements specification, should be complete, consistent, comprehensible, and traceable to requirements, unambiguous, modifiable and writable. The success of the requirements specification in terms of the standards largely depends on the effectiveness of the exchange of information between users and systems analysts. During this stage users have to provide information so that the resulting system will address their system needs. Systems analysts also have to ensure that technological constraints and possibilities are taken into account. Up to two-thirds of the maintenance costs of a system can be attributed to misconception, not identifying the real needs, or improper conceptual design.

In the *Social Relativism* approach, the success of the information system rests on its ability to help users better understand the currently accepted conventions and meanings. The focus is on the complexity of reality, which by its very nature is confusing. It does not try to hide this complexity by assuming that there is an underlying order that can be captured in simplifying models. The involvement in the social interaction produces unique experiential knowledge. The emerging meanings are a function of experience, which is different for different people. The uniqueness of each situation does not allow it to be handled only by applying universal laws and principles, as accustomed by the hard systems approach. There is a shift from the rigorous scientific paradigm of prediction by explanatory laws to interpretative accounts of experiences (Hirschheim and Klein, 1989).

Similarly, in the *Radical Structuralism* approach, user resistance is seen to be positive because labour becomes more aware of its collective interest, which in turn is a prerequisite for social progress. The approach deliberately exhorts the developer to become an advocate of labour to redress the balance of power between management and labour as the only morally acceptable course of action. The approach therefore motivates the developer to seek cooperation with labour

and their representatives. It advocates a participative approach but only with one party – labour. It is primarily for this reason, that it is classified as a soft systems approach and not a dialectic approach: for although, it seeks conflict to establish grounds for system development , only system objectives that evolve from the cooperation between labour and the developer are seen to be legitimate and rational. This approach too has its disadvantages: it embraces the notion of activism, which reduces the possibility of a justified consensus where cooperation instead of conflict is sought. Because the lack of conflict is sought, it reinforces the status quo: a weakness for systems development.

In the *Evolutionary Approach*, system developers are scientific investigators rather than economic men. Interpretations and decisions are made without knowing for sure whether they will prove useful or not. Problem formulations, possible solutions, and decisions are of a hypothetical nature. Prototypes and other kinds of experimental artifacts are used intensively. Systems developers spend more time identifying and experimenting with possible solutions than they do analysing problems.

Evolutionists use a bottom-up approach in systems development. They identify and evaluate concrete solutions to partial problems, gradually approaching the system as a whole. This is in contrast to the system constructors who favour a top-down approach. They develop systems in a stepwise fashion, decomposing and refining an abstract conception of the system as a whole into its concrete components.

Common to all three (social relativism, radical structuralism and the evolutionary approach), is what Walsham (1993) describes as the socio-technical approach to work organization, which places emphasis on the need to match social and technical systems in an appropriate way, and not to emphasise the technical system at the expense of the human system. The approach also recognises the importance of job satisfaction, autonomy and self-determination for social groups, involving users directly in the design of their work activities and supporting computer-based systems.

3) The Dialectic Approach:

This approach is based on the idea that the world is always changing, and that it cannot be understood unless there is understanding of what change is and why it takes place. The claim of the dialectic approach is that thinking must be in terms of contradictions in order to understand, explain and control change. The dialectic systems thinker accepts the ambition of the hard systems thinker to map the world, as well as the ambition of the soft systems thinker to have a rational debate between different constructions of the world (Dahlbom and Mathiassen, 1993). Both the interventionist and neo-humanistic approaches follow this rationale.

In both approaches, the approach to systems development is deeply romantic, viewing the organisation as a living organism with powerful internal forces and conflicts. They are very different approaches from the mechanistic, hard systems construction paradigm that treats the organisation as a machine to be modelled by a computer system. They are also different from the soft systems, evolutionary approach with its view of development as co-operation with the users in a harmonious process of mutual learning. Both approaches do not avoid erring as the evolutionary approach does. They accept failure as a tool for learning and lack of failure as an indicator of repressed learning.

Having discussed the varying approaches to system development, it now becomes pertinent to consider the different roles that will be involved in implementing these approaches.

2.3.4 Implications for the Systems Development Team

Hirschheim and Klein (1993) discuss four roles of the IS analyst as systems expert, facilitator, labour partisan and emancipator or social therapist. Each role will be discussed in terms of the approaches adopted by the system developers.

The first of these relates to the purely technical role of the IS analyst as systems expert, in developing systems to agreed specifications (Walsham, 1993). As per the functionalist approach the primary role of the systems analyst is to be the expert in technology, tools and methods of system design and project management. His role is to design systems that model the true requirements of the system (reality) in a way that will turn the system into a useful tool for

management to achieve their objectives (ends). Their application helps to make the systems development more formal and rational, placing less reliance on human intuition, judgement and politics (Hirschheim and Klein, 1989). Similarly, in the construction approach, users play a somewhat passive role in the construction process. They are at most objects in a process of requirements engineering, being interviewed in order to supply systems developers with a definition of the problem and the relevant information. All the creative thinking is done by the systems developers as they produce specifications and find solutions without actively involving the future users. The aim of the systems development effort is the production of a high quality system that meets the specified requirements. The result of the process is a computer system that is subsequently delivered to the users. The actual implementation of the system into an existing technological and organisational environment is not considered part of the development task.

The second role of the analyst as facilitator is an approach that would be natural when using soft systems methodologies (Walsham, 1993). As the social relativism approach facilitates the learning of all who are concerned, a switch in the role of the developer from one of system expert to facilitator who helps to stimulate reflection, cooperation, and experiential learning is required. Strong participation is therefore favoured (Hirschheim and Klein, 1989). The role of the systems developer in the social relativism approach is to interact with management to find out what type of system makes sense, but there is no objective criterion that distinguishes between good and bad systems. This primarily depends on what the parties come to believe is true. The developer should work from within the users' perspective and help them to find their preferred views.

In radical structuralism, systems developers again act as facilitators in that they can choose to side with the workers, designing systems which help their interests. In this case, they use technology to enhance labour's traditional skills and craftsmanship, attempting to make work both more rewarding – economically and psychologically- and deliver a better product.

In the evolutionary approach, system developers are strongly dependent on problem owners and future users. They acknowledge that users play an active role in evaluating design proposals and prototypes, and problem owners are needed to negotiate and make decisions regarding the

problem formulation and the quality of the produced system. In the evolution approach, system developers are still technical experts but rather than being able to construct the best solution by themselves, they have to become teachers and facilitators as well. They propose and develop technical solutions, but throughout the development process they communicate and interact with problem owners and users. They engage them in evaluating alternatives and making decisions (Dahlbom and Mathiassen, 1993).

The third role of the analyst as labour partisan suggests that the developer becomes an advocate of labour to redress the balance of power between management and labour. Assuming this role allows developers to design systems which help workers' interests, by using technology to enhance conventional processes and procedures, attempting to make work both rewarding, economically and psychologically, and to ultimately deliver a better product. (Walsham, 1993; Hirschheim and Klein, 1989).

The final role identified for the IS analyst is that of emancipator. Here the developer tries to create conditions for free and open discussion that lead to shared understanding, but in contrast to the facilitator role this discussion must include a critical examination of existing barriers to emancipation such as authority and illegitimate power, peer opinion pressure, social differentiation and the bias and limitation of language use (Walsham, 1993). In the interventionist approach, system developers act as consultants and change agents. They are called upon because of their technical competence, but they have to be equally skilled at handling organisational change. They must negotiate and create commitments with other involved actors. The systems developer is no longer an expert solving the problems of other people. The problem owners and users are themselves active and responsible participants in the process. The users have become designers and the task of the systems developer is to facilitate learning and give technical advice. Intervention is an approach to systems development with and by the users. Responsibilities are negotiated and shared between systems developers and users. The systems developers with a interventionist approach take responsibility not only for the design of the computer system but also for its actual use in the organisation. This is unlike the constructionist approach, which frees itself from responsibility after the system set up and

running. The interventionist is not satisfied with meeting the requirements of a contract seeks to deliver a system solving the real problems of the client.

Similarly, in the neo-humanism approach, systems development is governed by three knowledge interests. The technical knowledge interest directs the developer to be sensitive to issues associated with effective and efficient management of the system project. The interest in mutual understanding directs the developer to apply the principles of hermeneutics, which examine the rules of language use and other practices by which comprehensibility is improved, and disagreement or other obstacles to human communication. Finally, the knowledge interest in emancipation directs the developer to structure systems development to reflect the principles of rational discourse.

They are however certain factors such as authority and illegitimate power, peer opinion pressure, time, space and resource limitations, social differentiation and language constraints, that provide obstacles to human communication throughout systems development. They create difficulties of understanding the relevance and implications of design issues across social and organisational boundaries. Legitimate system objectives emerge from a free and open discussion that leads to a shared understanding and does not suffer from the harmful effects of these barriers. Rational discourse however, is an ideal that cannot be fully implemented. By the use or development of information systems some, but not all of the barriers to a rational discourse could be mitigated (Hirschheim and Klein, 1989).

The hard and soft systems methodology appear to represent two extreme ends of systems development. Kuhn (1996) states that the usual approach to the design of manufacturing technology is the technology-centered approach (hard systems approach). Corbett (1996) explains that this approach involves the imposition of a clear-cut problem definition on a relatively unstable organizational reality. It also means the adoption of linear, top-down design procedures that handicap design in a very complex organisational reality. The overriding concern in a hard design approach is technical design; little attention is accorded either the organisational context in which the system is to operate or the social implications of the system. The

technology-centered approach leaves the engineering and computer professionals to decide the extent to which user participation is useful and permissible.

By contrast, human-centered design (soft systems approach) puts human, social and organizatio nal considerations on at least an equal footing with technical considerations in the design process, seeing operators and end-users as central to an effective system. Well-designed technology should make use of human strengths such as skill, judgement and capacity for learning in order to create a robust and flexible productions system, rather than seek to minimise and strictly control human intervention (Kuhn, 1996).

The hard systems approaches and dialectic approaches discussed are complementary, and according to the principle of limited reduction they should be combined to effectively cope with complexity and uncertainty. The professional challenge, however is not merely to choose the right combination of approaches. It is rather to understand and change established traditions in the user organisation as well as in the project group and in the development organisation as a whole. The approach that is best suited for the developer really depends on the complexity and uncertainty of the system. The main concern in the hard systems/constructionist approach is complexity, whereas the main concern in the dialectic/evolutionary approach is uncertainty. This suggests the following principle: in situations where the complexity of the problem is high and the uncertainty is low, choose a hard systems approach. In situations here the complexity of the problem is low and the uncertainty high, choose a dialectic approach. If the complexity and uncertainty are both high, system developers should consider a combination of both (Dahlbom and Mathiassen ,1993).

Because choosing between these paradigms may present difficulties, it is important to first review all these paradigms in terms of three ways of thinking as discussed: the hard systems approach, the soft systems approach, and the dialectic approach. The three paradigms can be represented as follows:



Hard Systems Thinking Soft Systems Thinking Dialectic Approach

Figure 2 Scale of the three Paradigms

Deciding how the three ways of thinking should be applied to the three paradigms, is not an easy task. On the one extreme systems construction and the hard systems approach represent the mechanistic world view, and on the other extreme, intervention and the dialectic approach represent the romantic world view. Systems evolution and soft systems thinking, however, can be thought of as some sort of compromise between the two extremes. With this classification, Dahlbom and Mathiassen (1993) contend that the evolution paradigm is the central paradigm. The task of the systems developer is problem solving in the complex context of organisational information processing. Sometimes, the problem is extremely clear-cut, and the strategy of top-down systems construction cannot be adopted. Sometimes, the situation is so uncertain that the system developer has to practice intervention. But most of the time system developers are in between these extremes doing experimental problem solving. This approach to the three paradigms also invites the system developer to think of them as steps on the way toward a functioning computer system. Ordering them from left to right, the system developer wants to end up on the far left with a routine computer construction task. The less well-structured and uncertain the situation is, the further out to the right he has to begin, and the longer it will take to get back to the business of constructing computer systems.

The choice of which approach to adopt in system development practices, may influence the success of a system development team, and ultimately the end system result. It is important to consider areas of weakness and reasons that contribute to system failure. A thorough understanding of these factors may shed light on the problem areas of existing system development practices, and can be addressed with the aid of the paradigms discussed above. A discussion on system failures follows.

2.4 REASONS FOR SYSTEMS FAILURE

Information systems (IS) have been implemented in many diverse areas and have not always been successful (May, 1998, Skudlark and Ahn,1997, Whyte, Bytheway and Edwards, 1997, Briggs, Vreede, Nunamaker and Sprague, 2003; Riley and Smith, 1997). There has been considerable research into IS failure types and reasons for frequent IS failures (Gladden, 1997; Lyytinen and Hirchheim, 1987). Gladden (1997) reported that 75% of information systems developed were either never completed or the completed systems never used. Lyytinen and Hirchheim (1987) confirmed that at least half of these information systems were failures in spite of the numerous progresses and strides made in development, implementation and usage of them. Further research reveals that 15% of all software projects never deliver anything i.e. they fail utterly to achieve their established goals and never accomplish the benefits that were anticipated when the systems were acquired or built (Alter, 1992). Overruns of 100 – 200 % are also common in software projects.

So many software projects fail in some major way that "success" has had to be redefined to keep everyone from becoming despondent. In some cases, the computer programs never operate correctly on the computer; in others, the system never works successfully in the organisation, even though the programs operate on the computer (Alter, 1992). Software projects are sometimes considered successful when the overruns are held to 30% or when the user only discards a quarter of the result. Software people are often willing to call such efforts successes, but members of our user community are less forgiving. They know failure when they see it (Abdel-Hamid and Madnick, 1990).

Martin (1991) maintains that no system is ideal – no system exhibits maximal performance. Too many practical constraints prevent the design of an ideal system. Such constraints include time, funds, skilled personnel, and political and environmental considerations. Technology and the business environment move too quickly to tolerate these constraints which are elements that are needed to design ideal IS's. However, at some point along the performance continuum, there is an agreed upon point labelled success. Parties to this agreement are the designer and user community. Martin (1991) deems an IS successful if within tolerances (agreed upon by designer

and users), the IS meets a certain number or percent of measurable system goals (agreed upon by designer and users) such performance having been measured in some systematic manner (agreed upon by designer and users).

There is a frustrating element to the definition. If users and the designer reach a measurable definition of success, that definition can only be temporary, because the nature of users entering the agreement will change over time. Users are promoted from the ranks of those using the new system, transfer laterally to other applications in the organisation, or leave the company. This constant change of the cast of users for the designed system will have changed. More surprisingly, the users who remain will also have changed. The remaining users have seen what the system can do, and they expand their focus to what the system could do. Now these users expect more than they expected when the new system was designed. Their business needs have changed. System designers also change. They become more knowledgeable and dissatisfied with previously designed systems. They change their notion of what makes a successful system (Martin, 1991).

Previous research has only partially addressed the possible reasons for IS failure. Previous work has either taken a supply-led viewpoint, dealing mostly with the development process or the technical attributes of the delivered system, or it has taken an incomplete view of the non-technical issues (Whyte et al, 1997). Martin (1991) suggests that the reason for operational problems in IS is that the business environment surrounding the system is always changing. That change necessitates change in systems.

Another reason for operational problems is change in user expectations. As users become more experienced in business information systems, they expect more from the systems (Martin, 1991). Whyte et al (1997) agree that a system is only as successful as users accept it to be. Indeed, system success is defined in terms of user expectations. Whyte et al (1997) and Briggs et al (2003) agree by saying that when an IS fails, one cause may be its inability to meet the expectations of its stakeholder groups (i.e. system analysts, end users, sponsors, and customers). This is partly due to the individual interests in the project and in the structural and professional positions in the development process that exist (Szajna and Scamell, 1993). From a developer's

perspective, a successful IS may be one that is completed on time and under budget, with a complete set of features that are consistent with specifications and that function correctly. From an innovator's perspective, a successful system is one that attracts a large, loyal, and growing community of users. From a management perspective, a successful system may be one that reduces uncertainty of outcomes and thus lowers risks, and leverages scarce resources. From the end user's perspective, a successful system may be one that improves the user's job performance without inflicting undue annoyance (Briggs et al, 2003 and Chuang and Burns, 1997)

Whitten et al (1994) suggest that before approaching all participants it is important to:

- recognise what the responsibilities of the people are
- how the new system might affect them
- what their attitudes towards the system are
- what kind of information about the project the participant is interested in and
- how busy they are.

Alter (1992) identifies the following factors as responsible for system failure:

- lack of clearly defined goals
- insufficient resource allocation
- lack of top management support
- uncertain project plans and schedules
- incompetent project managers
- incompetent project team members
- inadequate communication
- poor feedback capabilities, and
- poor responsiveness to clients.

Skudlark and Ahn (1997) adopt the view that most of the IS failures are related to organisational and behavioural issues in the design and operation of systems, rather than technical ones. Unsolved organisational issues would lead to a lack of user acceptance and participation, resistance to change in work practices, lack of top management support and so on, which are all considered to be critical factors leading to a failure of IS (Skudlark and Ahn, 1997).

Similarly, Wastell (1999) is of the view that IS failure arises from the inherent high levels of stress and anxiety in IS projects that elicit defence-avoidance behaviour in project teams, Stress and anxiety emanate from the high complexity (technical and managerial) of IS projects, and they involve high levels of risk and uncertainty, political strife and the need to accommodate multiple stakeholder interests. This climate of stress and anxiety exerts great influence on the cognitive and social process that are fundamental to the success of IS development.

Organisational issues have been considered the most critical bottleneck for successful IS implementations (Skudlark and Ahn, 1997). IS's have been implemented in many diverse areas and have not always been successful. Misic (1996) supports this with evidence that analytical skills ranked 4.98 in importance for all tasks, technical skills ranked 6.05, Communication Skills ranked 6.32 and Interpersonal skills 6.91. This contribution may give some indication as to the possible error in prior failed system projects. With the evolution of technology, systems management needs to consider the foundation on which systems analysts' success is based – not just their technical skills. He recommends the bolstering of analytical skills as well as communication skills (Misic, 1996).

In the same vein, Whitten et al (1994) explain that understanding people is an appropriate introduction to communication skills. The participants of a system project, and who may engage in communication include:

- system designers (consisting of colleagues, other analysts and IS specialists)
- system builders (the programmers and technical specialists who will actually construct the system)
- system users (the people who's day-to-day jobs will be affected, directly or indirectly, by the new system) and
- system owners (who in addition to possibly being system users, sponsor the project and approve systems expenditures) (Whitten et al, 1994).

Many IS projects fail because of a breakdown in communications amongst these constituents (Whitten et al, 1994 and Finkelstein, 1989). IS projects are frequently plagued by communication barriers, usually created intentionally or accidentally by the project participants. The systems

owners and users have their own language to describe forms, methods, procedures and so on. System designers and builders have their own terms, acronyms, and jargon for describing things. As a result, a communications gap develops between these two groups (Whitten et al, 1994) making it really difficult to determine the true information needs of users.

Alter (1992) also attributes failed systems to resistance to system change, political issues that arise as a result of the system change, poor quality of teamwork between users and technical staff of analysts, programmers and other IS professionals and cultural differences. These causes of IS failure have been identified by Moorhead and Griffin (1992) as organisational behaviour issues. Kaye (1990) thus propose that better methods of systems analysis and design are needed to ensure appropriate, feasible and acceptable programs and applications and it is therefore with this intention, that this proposal is submitted: to consider organisational behavioural means to improve systems development.

An important focus of much recent IS research has thus turned to social, political and organisational aspects of IS development (Myers and Young, 1997). Unless these organisational and behavioural issues are handled before an IS is designed and implemented, the IS will be more likely a failure than a success (Skudlark and Ahn, 1997). This is further supported by Whyte et al (1997) who attribute system failure to uncertainty (lack of information) and equivocality (the absence of clarity or presence of ambiguity) among other causes; and by Kaye (1990) who identified poor or lack of communication between system developers and users, a primary cause of IS failure. Many organisations fail to implement or reap the benefits of IS (information system) projects (Riley and Smith, 1997). The literature on human-centred computer design and change management points to the problems associated with introducing computer systems such as developing mental models, creating buy in and sustaining commitment to new methods of working (Riley and Smith, 1997).

Barki and Hartwick (2001) agree that Interpersonal Conflict is a neglected topic in Information System Development (ISD). While deemed important, few ISD studies have examined interpersonal conflict, the management of this conflict, or the impact this conflict has on project outcomes. Warne (1998), for example, discovered that conflict among developers of the project

was considered to be the least damaging to the project, but both conflict between users and developers and conflict between different user groups was considered to be a significant threat to the success of a project.

Whatever the case, the consequences of ineffective IS developments have proved costly to organisations seeking to improve their competitive positions. Poor development practices may result in inferior systems, which are sometimes institutionalised despite their low quality. In other cases, systems are developed that require redesign at great expense. (Newman and Robey, 1992).

Abdel-Hamid and Madnick (1990) and Skudlark and Ahn (1997) however remain optimistic that every failure has its silver lining. The research is valuable because it gives significant learning experience in identifying the patterns of events leading to failures, and provides opportunities for improving the IS development and implementation process. Abdel-Hamid and Madnick (1990) however, believe that despite the vast knowledge gathered from failed projects, rarely do people try learn from system failures. People tend to hide mistakes rather than report and evaluate them. Further, the important lessons are never readily apparent; they need to be extracted from deep within the project experience (Abdel-Hamid and Madnick, 1990). IS can be implemented more successfully by learning from the history of failures and acting proactively to resolve any issues which can lead to failure (Skudlark and Ahn, 1997).

2.5 CONCLUSION

This chapter introduced the Systems Development Life Cycle (SDLC), the life span of an information system from its inception to its removal or redesign (Szymanski et al, 1991 and Martin, 1991). Five stages were depicted in the life of a system, the rearrangement of which results in many different development methodologies. The variety of methodologies available present system development leaders with the dilemma of which to apply in their development environment. The chapter addressed the strengths and weaknesses of these methodologies, and the social psychology of systems development.

The hard and soft systems methodologies represented two extreme ends of systems development. The hard systems approach is a technology-centered approach, with the overriding concern in a being the technical design with little attention paid to either the organisational context in which the system is to operate or the social implications of the system. By contrast, the soft systems approach focuses on the human, social and organisational considerations on a par with technical considerations in the design process, seeing operators and end-users as central to an effective system. The approach that is best suited for the developer really depends on the complexity and uncertainty of the system, as well as the skills and attitudes of the different players involved in systems development.

Not all systems result in successes and encourages the consideration of organisational and behavioural issues in systems development, and not merely the technical issues. It suggests that much of the system development process is richly filled with conflicting interests, and that these cannot be ignored as they may in fact determine system success or failure. Having said this, focus is shifted to the negotiating process, and an attempt is made to grasp ways in which these conflicting interests can be approached.

CHAPTER THREE

BACKGROUND TO NEGOTIATIONS

3.1 INTRODUCTION

In every relationship, the differences that make us unique individuals are also sources of potential conflict. People differ in values, self-interests, priorities and in many other ways. The greater these differences, the heavier the burden to manage them. The less effectively these differences are managed, the more conflict is experienced in relationships. As relationships are vehicles of bringing value to each partner, conflict drains the relationships of the capacity to satisfy needs. As the dependency on a relationship to satisfy needs increases, conflict is more likely to occur. High interdependency creates a climate in which conflict can grow more intense (Dana, 1990). It comes as no surprise therefore, that negotiating has become an important topic of research in the field of Information Systems development, as systems development involves a social process of communicating needs, learning, and negotiating, both within and between stakeholder groups including IS analysts, users, and other interested parties such as senior management (Walsham, 1993).

As conflict becomes more prominent in interactions, more and more occasions require negotiation. Everyone wants to participate in decisions that affect them; fewer and fewer people will accept decisions dictated by someone else. People differ, and they use negotiation to handle their differences (Fisher and Ury, 1991). This chapter aims to create an awareness of the importance of negotiating skills, so that conflicts that arise are effectively managed without compromising the quality and success of the end system delivery.

3.2 NEED FOR NEGOTIATION

In the workplace, conflicts lead to career stagnation, job stress, lowered productivity, lessened motivation – even dismissal and resignation. For every terminated relationship, there are many more in which people maintain a tense and distant truce that brings them only meagre satisfaction. Chronic, unresolved interpersonal conflicts cause needless stress and wastefully

drain individual vitality and organisational resources. The magnitude of loss, in human and financial terms, is massive (Dana, 1990).

Unmanaged employee conflict is perhaps the largest reducible cost in organisations today- and probably the least recognised. It is estimated that over 65% of performance problems result from strained relationships between employees – not from deficits in individual employees' skill or motivation (Dana, 1990). Thomas and Schmidt (1966) conducted a study that revealed that 25% of a typical manager's time is spent in resolving conflict. Clearly, this portion of management's salary budget represents no small investment in shielding productive work from the destructive effects of conflict. Costs may include costs of a poor decision, loss of skilled employees, restructuring costs (cost in changing roles and positions in order to reduce conflict, as well as cost of adapting to new roles and positions), sabotage, lowered job motivation and lost work time (Dana, 1990).

No matter how much people may agree on ultimate objectives, they will all have differing views on how to achieve them. They will also have differing beliefs, standards of behaviour, manners, priorities, personalities and senses of humour and show every facet of humanity that could possibly be evident in the working context. They can all lead to conflict.

So many of these difficulties are unnecessary. There exists a way for colleagues in strained relationships to take charge of managing differences and resolving conflicts. They can regain trust and resume productive teamwork. The method of negotiation is so simple it may seem simplistic. Yet it has the power to transform conflict into co-operation, mistrust into trust and dysfunctional work teams into efficient partnerships. It harnesses natural, constructive forces, lying dormant within workplace relationships, which can heal wounds caused by anger, insult and hurt (Dana, 1990). The secret to analysing cost and benefits of investing in negotiating (cost of proposals, cost of accessories, costs of negotiating time, intangible costs (image, reputation) is simply to account for all of the cost and all of the benefits in securing an agreements and compare those estimates with the cost and benefits of alternatives (Johnson, 1993).

3.3 NEGOTIATION DEFINED

"Negotiate" derives from the Latin word "negotiari" which simply means, "to do business", that is, to go about work and pursue interests (Management Action Guides, 1993). Lewicki et al, (1997) define negotiating as a basic, generic process that is often used in our everyday human activities. It is a process of interaction between parties directed at reaching some form of agreement that will hold, and which is based upon common interests, with the purpose of resolving conflict, despite widely dividing differences. This is achieved through the establishment of common ground and the creation of alternatives. Common ground, according to Pienaar and Spoelstra (1996) is not just what people have in common but what they could become together.

Pienaar and Spoelstra (1996) explains that negotiating is an exchange of information through communication. The information is formulated as strategies and techniques. These strategies and techniques originate from the negotiation relationship between the parties and they serve to continue or discontinue the relationship. The purpose of this communication exchange is to reach agreement between parties who have certain things in common while disagreeing on others. Therefore, negotiation, in this definition, is defined as a process. Hawver (nd) explains that negotiation is a process of building on common interests and reducing differences in order to arrive at an agreement, which is at least minimally acceptable to all parties concerned. The parties co-operate by getting together, and then must try to reduce the conflict of different interests. Ways (1979) and Byrnes (1987) add that any negotiation therefore involves both co-operation and conflict. It is a process of mutual adjustment of interests.

Sebenius (1992) explains that to understand negotiations it is easiest to imagine that two negotiators involved in an encounter have thought hard about their underlying interests in different possible settlements of the apparent issues. Further, suppose that they have a relatively clear, if possibly changing, assessment of the their trade-offs, and taking into account contingencies and dynamic elements, have compared them to the value of their best no-agreements alternative. From the viewpoint of each party, a set of possible agreements has been envisioned.

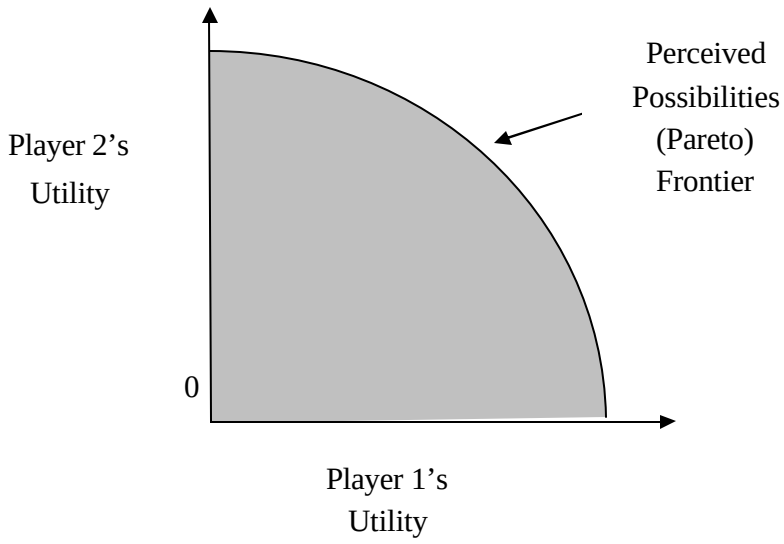


Figure 3 Pareto Possibility Frontier (Sebenius, 1992: 24)

The situation might be familiarly represented as in figure 3. The origin represents the value of failing to reach agreements; each side's best alternative to agreements implies the location of this point. The familiar Pareto Frontier represents the evaluations of the set of those possible agreements on the issues that could not be improved on from the standpoint of either party without harming the other. In general, neither party knows the location of the frontier, only theoretically that it is there. The entire shaded region bounded by two axes and the frontier is the zone of possible agreements. In general, each party has its own perceptions of it. It can encompass the whole range of possible interests, alternatives and agreements. This model is what Anstey (1991) describes as the basis of positional or distributive bargaining, where everyone will "lose a bit to win a bit".

Recurrent themes are evident in these definitions, allowing the following elements to be identified as core to negotiation (Anstey, 1991):

- it is a verbal interactive process
- involving two or more parties
- who are seeking to reach agreement
- over a problem, or conflict of interest between them

- in which they seek as far as possible to preserve their interests, but adjust their views and positions in the joint effort to achieve an agreement.

The concept of "negotiating power" is difficult to explain. If one has negotiating power, he has the ability to affect favourably someone else's decision. This being so, one can argue that ones power depends on someone else's perception of his strength, so it is what they think that matters and not what skills are actually possessed. It can thus be said that negotiating power is primarily a matter of perception. Having said that, it is also necessary to add that a false impression of power is extremely vulnerable, capable of being destroyed by a word. In order to avoid focusing attention on how to deceive other people, it seems best at the outset to identify what constitutes "real" negotiating power- an ability to influence the decisions of others assuming they know the truth. In addition, it will be possible at times to influence others through deception, through creating an illusion of power. Even for that purpose, it will be necessary to know what illusion is required to be created (Fisher, 1990).

Calero (nd) provides benchmarks of a successful negotiation. For a negotiation to be successful:

- Both parties must first feel that the process was worthwhile, that the time consumed was productive and not just an exercise.
- Both parties feel they got something out of the negotiation, that specific needs were satisfied.
- Both parties have to leave the negotiating table with their self-respect intact, regardless of conflicts that took place, or intimidation and harassment they may have experienced
- Both parties also must feel that they have achieved the majority of their objectives.
- Both parties must leave the negotiation with a positive feeling about having learned something from one another.
- Both parties must feel that they could negotiate with each other again.
- Each party must leave feeling the other will comply with the agreement reached and not negate the results.

Although negotiation takes place daily, the above discussion shows that it is not easy to do well. Standard strategies for negotiation often leave people dissatisfied, worn out, or alienated – and

frequently all three (Fisher and Ury, 1991). This is primarily because negotiating is time consuming, involves some sort of win-lose scenario, people's perceived inability to be persistent, or to keep their tempers, lack of support from management, inconsistent needs from side, resentment for disagreeing (Management Action Guides, 1993). Since everyone negotiates about numerous things in many different situations, knowledge and skill in negotiating are essential to anyone who works with and through other people to accomplish objectives (Lewicki et al, 1997). The important thing to keep in mind however, is that negotiating skills can be both learned and taught (Fisher, 1990). It is therefore important not to be overwhelmed with negotiating to solutions, but to tap into the styles, techniques and skills documented herein.

Walton and McKersie (1991) identify four sub-processes in negotiations:

- *distributive bargaining*, through which pure conflicts of interests are resolved;
- *integrative bargaining,* through which parties solve common problems and seek complementary interests;
- *attitudinal restructuring,* whereby the parties seek to influence each other's attitudes and adjust the basic bonds which relate them; and
- *intra-organisational bargaining*, through which each side attempts to reach an internal consensus.

Lewicki et al (1997) distinguish between two different types of negotiation, namely *distributive bargaining* and *integrative negotiating*. In distributive bargaining, the goals of the parties are initially irreconcilable – or at least they appear that way to the parties. Central to the conflict is the belief that there is a limited, controlled amount of key resources available- a "fixed pie" situation. Both parties may want to be the winner, both may want more than half of what is available. In these situations their goals are mutually exclusive and hence lead to conflict. One party's loss means the others gain. This however, need not be true. Everyone can be winner. Rather than assume that all conflicts are win-lose events, negotiators can learn that win-win solutions are possible. This assumption will lead them to search for the win-win options, and often they will find them. This win-win approach is called integrative negotiation. In summary, integrative negotiation of the parties' goals are not mutually exclusive. If one side pursues its

goals that does not necessarily preclude the other from achieving its goals. One party's gain is not necessarily at the other party's expense.

The choice of approach depends on a variety of factors including the nature of the issues at stake, the history of relations between the parties, the bargaining skills, ideological influences, constituencies and the intensity of the conflict. Another influential factor affecting choice of approach lies in the extent to which the parties have a concern about their own and each other's outcomes. A few salient approaches or styles of negotiation may be identified: contenders, yielders, compromisers and problem solvers. Highly competitive bargainers or contender may be concerned only about their own gains, and their use of tactics will tend to reflect an aggressive win-lose style and intent. On the other hand yielders are so concerned about the relationship that they tend to assume subordinate styles, often losing on substantive issues especially if they are in interaction with tough contenders, yielders have a lose-win style (Anstey, 1991). Generally however, the major process is one in which some compromise is expected –an approach which recognises that everyone will "lose a bit to win a bit" in the exchange. This reflects the basis of positional or competitive bargaining (Walton and McKersie, 1991).

Finally, in defining negotiation, Cohe n and Bradford (1990) deem it necessary to distinguish between manipulation, negotiating and influencing. Manipulation consists of actions to achieve influence that would be rendered less effective if the target knew ones actual intentions. Direct attempts to discover what another party wants in order to cooperate, so that the response may be appropriate by making a fair exchange, is not manipulation. It can be done without hiding or distorting intentions, and should result in both parties gaining from the transaction. Conger (1998) and Hersey (1984) support Cohen and Bradford (1990), by saying that persuasion can be used in selling and deal-clinching situations, and it can be misused to manipulate people. But exercised constructively and to its full potential, persuasion supersedes sales and is quite the opposite of deception. Effective persuasion becomes a negotiating and learning process through which a persuader leads colleagues to a problems' shared solution. It involves careful preparation, the proper framing of arguments, the presentation of vivid supporting evidence, and an effort to find the correct emotional match with the audience (Conger, 1998).

3.4 THE PROCESS OF NEGOTIATION

Little is known about the factors that contribute to making negotiating a magical, mystical and somewhat challenging process. If people had complete knowledge of themselves, the other side, and the issues, negotiations would be far different from what we know them to be. Because that is not the case, there is an excitement about the processes of negotiating. Trying to understand one's own needs and capabilities, or another's expectations and motivations, and trying to set realistic levels for reaching agreement all require skill and patience. Improvements of one's perceptual skills are possible and desirable (Johnson, 1993 and Management Action Guides, 1993).

Fisher and Ury (1991) propose two ways to negotiate: the soft or hard approach. The soft negotiator wants to avoid personal conflict and so makes concessions readily in order to reach agreement. He wants an amicable resolution; yet he often ends up feeling exploited and feeling bitter. The hard negotiator on the other hand, sees any situation as a contest of wills in which the side that takes the more extreme positions and holds out longer fares better. He wants to win; yet he often ends up producing an equally hard response, which exhausts him and his resources and harms his relationship with the other side. Other standard negotiating strategies fall between hard and soft, but each involves an attempted trade-off between getting what one wants and getting along with people (Fisher and Ury, 1991). Fisher and Ury (1991) thus recommend a third way to negotiate, neither hard nor soft, but rather hard *and* soft. This is the "principled negotiation method" developed to assist in deciding issues on their merits rather than through a haggling process focused on what each side says it will do and won't do. It suggests one look for mutual gains wherever possible, and that where interests conflict, one should insist that the result be based on some fair standards independent of the will either of either side (Fisher and Ury, 1991).

The method of principled negotiations is hard on merit, soft on people. It employs no tricks and no posturing. Principled negotiation shows one how to obtain what one is entitled to and still be decent. It enables one to be fair while protecting himself against those who would take advantage of his fairness (Fisher and Ury, 1991). Four points define this form of negotiation that can be used under almost any circumstances. These are: separating the people from the problem;

focusing on interests not positions; generating a variety of possibilities before deciding what to do and insisting that the result be based on some objective standard.

Leritz (1991) adopts a similar approach called “no-fault negotiating” which aims to get needs met without someone else having to be wrong or victimised. In No-fault negotiating, the objective is not to win or to “beat” the other person. When domineering paternalism reaches the point where one side seeks to harm or destroy the other, negotiation is impossible (Johnson, 1993). The objective is not to achieve a one-time advantage as if there were no tomorrow. The objective is to understand what needs exist in others and ourselves and to find creative solutions, which will respond to all the existing needs. It is a process of understanding, of accepting real conditions and people and of mutual searching. It is a reality-based approach. It realises that while there may be negotiating about objects or conditions or external problems, negotiations occur with people. Problems and relationships are being negotiated. The essential part of no-fault negotiating is to keep the relationship in place while solving problems.

Further still, Skudlark and Ahn (1997) differentiate between a descriptive approach and a decision analytic approach. The descriptive approach is a critical difference allowing subjective assessment of the negotiating party’s probabilities, preferences and rational behaviour. The decision analytic approach is gaining acceptance as a viable new approach for negotiation analysis. It follows the premise that a decision problem can be characterised by uncertainty, complexity, dynamic natures, allocation of finite resources and multiple objectives. The cycle consists of three stages: formulation stage, input assignment stage and evaluation stage. In the formulation stage, the decision problem with the variables that have been chosen and the objectives to be achieved is formulated. Also, creative alternatives that need to be evaluated are elicited. In the input assignment stage, the necessary information for analysis such as outcomes, probabilities associated with the outcomes, time preferences, risk preferences and so on, are assessed. In the evaluation stage, alternatives based on the structure that has been framed, gathered information and preferences are evaluated. Then the whole decision analysis cycle is iterated until the model and the insights it provides are satisfactory. Following the decision analysis cycle does not guarantee good outcomes, but it helps to make sure that any important factor during the whole decision process is not missed (Skudlark and Ahn, 1997).

Using the decision analytic approach, the major sources of disagreement among stakeholders were identified, discussed and resolved. The research showed how to resolve conflicting interests proactively and demonstrated the value of the approach. As a result of the successful negotiation, it was estimated to have saved $96.9 million dollars after tax for AT&T (Skudlark and Ahn, 1997).

Mastenbroek (1990) maintains that the negotiating process involves the four activities tabulated below:

Activity	Description
1. Activities directed at dividing, which are directly concerned with the distribution of benefits and burdens	These activities usually attract the greatest attention. They are explicitly directed toward the end result. The most important sub-activities in this category are: (a) exchanging information about aims, expectations and acceptable solutions, (b) exercising pressure to influence each other's perception of what is attainable and (c) working step by step toward a compromise with mutual concessions.
2. Activities that influence personal relations and the negotiating climate between parties	It is important to keep personal relationships between negotiators on a reasonable footing. A poisoned atmosphere in which negotiators have a negative approach to each other hampers the division-oriented activities. In bringing out the mutual dependence of the parties and of building sufficient trust, acceptance and credibility.
3. Activities that a negotiator uses to influence his rank and file	Yielding to pressure of the rank and file often means that the chance of the negotiators to achieve results is reduced. Constituents tend to be more radical than their representatives. They not only want a larger share of the benefits, but they also see their adversaries in more negative and stereotyped ways. If a representative goes along with these tendencies, his or her position as a representative is often strengthened. Negotiators who do not consider themselves too

	strongly tied by their rank and file obtain the best results.
4. Activities that are directed at influencing the balance of power between the parties.	When there are obvious differences in power, different behaviour occurs: manipulative and exploiting versus submissive and accommodating. Although attempting to make fundamental changes in the existing balance of power is generally the signal for fighting, some space for movement will still exist.

Fisher and Ury (1991) classify the negotiating process into three generic stages namely, analysis, planning and discussion.

- ***Analysis***

During the ***analysis stage*** one simply tries to diagnose the situation, to gather information, organise it, and think about it. The people problems of partisan perceptions, hostile emotions and unclear communication must be considered at this stage as well both parties' interests. Options can be noted already on the table and any criteria already suggested as a basis for agreement can be identified. Zimbardo (1990) and Byrnes (1987) explain the importance of preparing for initial contact: This involves being informed; learning as much as one can about the opposition, actively role–playing with a friend the anticipated situation (this includes switching roles), doing a critical self-appraisal, being confident and being sensitive to the varied reasons underlying the attitudes in question.

Research is thus an important part of preparation for negotiation. Gathering information allows the wealth of material to amass in ones mind so that advantage can be taken of any new development during the negotiation (Nierenberg, 1981 and Hermone, 1974). On the matter of researching the opponent, Bacon (1650 : 52) wrote the following:

> "If you would work any man, you must either know his nature and fashions, and so lead him; or his ends, and so persuade him; or his weakness and disadvantages, and so awe him; or those that have interest in him, and so govern him. In dealing with cunning persons, we must ever consider their ends, to interpret their speeches; and it is good to say little to them, and that which they least look for. In all negotiations of

> difficulty, a man may not look to sow and reap at once, but must prepare business, and so ripen it by degrees."

Lewicki et al (1997) suggest ways in which to uncover interests of both parties. To uncover interests, one must ask "why" in order to elicit the motive behind the demands/position. One basic technique to discover people's positions is to actually put oneself in their position. Examine each position they take and ask "why?". In this way we uncover the interests of the opponent. Another useful techniques is to ask "why not?". In this way it becomes clearer why the opponent has not taken the stance when the other party has selected to defend. Then it is necessary to analyse the consequences of insisting on their decision, or swaying over to the opponents. Throughout this process, it must also be understood that each side may have multiple interests, the most powerful of which are basic human needs. Basic human needs include: security, economic well-being, a sense of belonging, recognition and control over ones life.

Sometimes however, it may not be that easy to uncover the opponents' interests. In which case it may also be difficult for them to uncover their opposition's as well. In cases like these, it becomes important to talk about interests, and to reveal them to the opponent. In order for the other side to take these interests into account, explain to them what those interests are. Similarly it is very important to make the other side understand ones interests thoroughly, and not to understate them. Further, acknowledge their interests as part of the problem. In this way the other side will appreciate their opponent's interests, if appreciation is shown of theirs. It is also important to put the problem before the answer. Proposals should follow the reasoning. Lastly, from a psychological perspective, Fisher and Ury (1991) recommend that effective negotiators should be hard on the problem, but soft on the people. One must give positive support to the people on the other side equal in strength to the vigour with which one emphasises the problem. This inconsistency works psychologically.

Four interests that may be involved in a negotiation:

- Substantive interests: are types of interests that relate to the focal issues under negotiation-economic and financial issues such as price or rate, or the substance of the negotiation such as the division of resources. These interests may be intrinsic (intrinsically satisfying for us) or instrumental (help us achieve a longer-range goal).

- Process Interests: are related to the way disputes are settled. One party may want to pursue distributive bargaining because he sees negotiation as a competition and enjoys the strategic game. Another party may be negotiating because they believe that they have not been consulted in the past and they want to have some say in how a key problem is solved. Again, process interests can be intrinsic or instrumental.
- Relationships Interest: means that one or both parties value their relationship with each other and do not want to take action that will harm or damage the relationship. Again there are intrinsic and instrumental relationship interests. McCarthy (1985) maintains that negotiators should not always seek to maintain or improve long-term relationship between the parties. There are occasions when emphasising the long-run (in terms of the relationship) is not appropriate. Many disputes are dominated by the need to avoid or terminate immediate conflict, even at the cost of worsening long-term relations.
- Principle Interests: Here parties are interested in what is fair, right, acceptable, ethical, or what has been done in the past. These factors may be deeply held by parties and serve as guides to their actions. Again they can be intrinsic or instrumental.

Having said all this, it can be noted that there may be more than one type of interest in a dispute. Parties can differ on the type of interests at stake, interests are often based in more deeply rooted human needs or values, and finally interests change (Lewicki et al, 1997).

Fisher and Ury (1991) suggest focusing ***on interests not positions.*** This requires a shift of focus from peoples stated positions to the interests at hand. This is because a negotiating position often obscures true intentions (people instinctively become defensive, and lose the objective at hand). They advise us however, that behind opposed positions lie shared and compatible interests, as well as conflicting ones. Shared interests and differing but complementary interests can both serve as the building blocks for a wise agreement.

Provis (1996) criticises saying that a key problem when considering interests is the ambiguity between objective and subjective interests. The former refers to whatever actually promotes an individuals' well-being, whether or not it is known or preferred by the individual. The latter

refers to what the individual prefers, whether or not it actually promotes the individuals' welfare. Further there is a difference between ultimate and instrumental interests.

- ***Planning***

During the ***planning phase*** one deals with the same four elements a second time, both generating ideas and deciding what to do. How does one propose to handle the people problems? Of the interests, which are most important? What are some realistic objectives? Additional options and additional criteria for deciding among them must be generated. In fact, Fisher and Ury (1991: 58) believe that:

> Skill at inventing options is one of the most useful assets a negotiator can have.

Generating a variety of possibilities before deciding what to do, is necessary to avoid the difficulty of designing optimal solutions under pressure. It is therefore a better practice to be prepared with a wide range of possible solutions that advance shared interests and creatively reconcile differing interests, instead of trying to decide in the presence of an adversary (Fisher and Ury, 1991).

All available answers appear to lie along a straight line between a party's and its opponent's positions. Often the only creative thinking shown is to suggest splitting the difference. In most negotiations there are four major obstacles that inhibit the inventing of an abundance of options: premature judgement (premature criticism results in fewer options being explored); searching for a single answer (premature closure limits the options); the assumption of a fixed pie (either/or kind of deal); thinking that solving their problem is their problem (each sides concern with only its own immediate interests leading to partisan positions, partisan arguments and one-sided solutions).

To invent creative options, Fisher and Ury (1991) suggest that the following be considered:

(a) separating the act of inventing options from the act of judging them (this can be done by use of a brainstorming session, which facilitates idea generation before idea evaluation);
(b) broadening the options on the table rather than look for a single answer;
(c) Searching for mutual gains and

(d) Inventing ways of making their decisions easy (allow for options that appeal to the other side).

In a complex situation, creative inventing is an absolute necessity. In any negotiation it may open doors and produce a range of potential agreements satisfactory to each side (Fisher and Ury, 1991).

- ***Discussion***

Again during the ***discussion stage***, when the parties communicate back and forth, looking toward agreement, the same four elements are the best subjects to discuss. Differences in perception, feelings of frustration and anger, and difficulties in communication can be acknowledged and addressed. Differences in personality, power and preferences should be considered at this point (Greenlagh; Neslin and Gilkey, 1985). Each side should come to understand the interests of the other. Both can jointly generate options that are mutually advantageous and seek agreement on objective standards for resolving opposed interests (Fisher and Ury, 1991). In the discussion cycle Fells (2000) explains the importance of differentiation (finding out each side's true interests), exploration (looking for ways to resolve the issues) and resolution (reaching the final decisions to conclude the negotiations). Communication, emotion and perceptions are deemed the most critical factors at this stage (Fisher and Ury, 1991).

Three problems occur in the communication arena. The first is the failure of negotiators to talk to each other, or at least not in a manner to be understood. Frequently each side has given up on the other and is no longer attempting serious communication. Instead, they talk merely to impress or convince third parties. The second problem is that of not hearing the other side. Often people don't seem to pay enough attention to what is being said, so much so that they cannot even repeat what is being said. This often occurs when one is so busy constructing the next argument, or response, that one actually forgets to listen to what is being said (Fisher and Ury, 1991, Nierenberg, 1981 and Kimball, 1994). The third communication problem is that of misunderstanding. Misunderstandings arise when needs are not clearly expressed or understood, or when parties rush negotiations to a close. Ambiguities, language barriers and cultural differences may also lead to misunderstandings (Fisher and Ury, 1991).

The following remedies for breakdowns in communications are recommended:

- Listen actively and acknowledge what is being said, this clearly. Perhaps reiterate what they have said, with a strong positive position, making the strength of their case clear for understanding is not necessarily agreeing. If possible, put their case better than they can, and then refute it, thus maximising the chance of initiating a constructive dialogue on the merits and minimising the chance of their believing there has been a misunderstanding.
- Speak to be understood, remembering that a negotiation is not necessarily a debate.
- Speak about yourself, not them. Don't accuse, but rather speak of what feelings are aroused by their actions. This way, it is not as easy to dispute feelings as it is to dispute accusations.
- Speak for a purpose, keeping in mind that the problem sometimes is not too little communication, but too much.
- Build a working relationship. Make the adversary a friend, instead of keeping him a stranger. It is easier to negotiate in this manner.

Zucker (1994) also advise to listen without judging, developing a genuine interest in others, learning to ask good questions, developing a desire to accommodate, developing the art of being silent.

Emotions are further expanded upon by Fisher and Ury (1991), Management Action Guides (1993) and Johnson (1993), who suggest that feelings and control of feelings may be more important than talk in negotiations. Emotions may quickly bring a negotiation to an impasse or an end. This why it is important to first recognise and understand both parties' emotions. Despite the critical impact that feelings have in negotiations, numerous commentators have noted and deplored the fact that emotions are one of the least studied phenomena in the field (Adler, Rosem and Silverstein 1998). On this matter, it has been suggested that negotiators should not react aggressively, not assume, listen actively, know as much about the opponent as possible, maintain a businesslike climate throughout and to put problems first and answers second (Management Action Guides, 1993).

Fisher and Ury (1991) urge negotiating parties to make emotions explicit and acknowledge them as legitimate. Making both parties' feelings an explicit focus of discussion will not only underscore the seriousness of the problem, it will also make the negotiations less reactive and more proactive. Is also important to allow the other side to release their feelings, making it easier to talk rationally. Following that, it is also wise not to react to emotional outbursts. Further, acts that would produce a constructive emotional impact on one side often involve little or no cost to the other. Priceless opportunities to improve a hostile emotional situation go a long way. Very closely related to emotion is that of attitude. As far as industrial negotiations are concerned, perhaps the most relevant feature of these definitions is the fact that attitudes involve an evaluative or emotive component. The moment people become emotionally involved with the facts of the situation, their understanding of the facts becomes subjective and they develop an attitude. It is a person's attitude to a fact, rather than the fact itself, which provides a stumbling block for the negotiator. There will thus be occasions when an attitude change is demanded by one side or the other (Kniveton and Towers, 1978). Adler et al (1998) suggest ways to deal with emotions: Determine situations that trigger inappropriate anger, decide whether to display feelings, use behavioural techniques to reduce anger (take a break, deep breaths etc.), express feelings effectively, avoid negotiator bias, try promoter trust. Dealing with the opponents anger could involve: defusing heated emotional build-up, assess the significance of the emotional display, address opponents emotions, respond to those emotions in strategic ways, help the opponent save face.

Zimbardo (1990) and Mastenbroek (1990) stress the importance of maintaining, intensifying and directing the interpersonal relationship at this stage. This involves:

- listening attentively,
- maintaining eye contact,
- individuating a person by using titles or names where suitable,
- individuate yourself, by sharing something personal,
- reinforce specific behaviours by nodding,
- be aware of resentment and work first to differentiate those feelings,
- plan well enough so that it seems unplanned and natural and
- tailor approaches to the target people.

On the matter of emotions in negotiations, the importance and strength of separating the people from the problem is further emphasised (Lewicki et al (1997); Management Action Guides (1993). This requires disentangling the people aspect from the problem and dealing with the two separately. This is because emotions typically become entangled with the objective merits of the problem. Fisher and Ury (1991) warn us not to forget that negotiators are people first. They have emotions, deeply held values, different backgrounds and viewpoints, and they are unpredictable. This human aspect of negotiation can either be helpful or disastrous. Failing to deal with others sensitively as human beings can be disastrous for a negotiation. At any point during a negotiation, it is always worth questioning whether enough attention is being paid to the people problem.

Another point to remember is that every negotiator has an interest in both the substance of the negotiation as well as in the relationship. A major consequence of the people problem in negotiation is that the parties' relationship tends to become entangled with their discussions of substance. On both the giving and receiving end, people and problem are likely to be treated as one, e.g. the statement , "the system analysis is incomplete", may be intended simply to identify a problem, but is likely to be heard as a personal attack. Anger towards a situation may lead one to express anger towards some human being associated with it in ones mind. Positional negotiating (both parties take positions/sides on an issue) intensifies the conflict. This is because the negotiation becomes a contest of will over positions aggravating the negotiation process. Positional bargaining deals with a negotiator's interest both in substance and in a good relationship by trading one off against the other. A party will thus sacrifice the substance of the relationship for the sake of that which it values more. Yet sometimes, giving in on a substantive point may buy no friendship, but convince the other side of negotiating weakness.

Dealing with a substantive problem and maintaining a good relationship need not be conflicting goals if the parties are committed and psychologically prepared to treat each separately. Relationships should be based on accurate perceptions, clear communication, appropriate emotions and a forward-looking, purposive outlook. To deal with psychological problem, psychological techniques should be adopted. Where perceptions are inaccurate, ways should be sought to educate. If emotions run high, ways for each person involved to let off steam should be

explored. And where misunderstandings occur, efforts should be focussed on improving communication (Fisher and Ury, 1991).

Some differences in opinions do not arise because of differences in the objects/events in issue, but because of differences in perception. It is in actual fact the reality (perception) as each side see it, that constitutes the problem in a negotiation and opens the way to a solution. For this reason Fisher and Ury (1991) recommend putting oneself in the opponents' shoes.

As people tend to see what they want to see, they tend to pick out and focus on those facts that confirm their prior perception and to disregard or misinterpret those that call their perceptions into question. In Fisher and Ury's (1991) view how one sees the world depends on where they sit.

The ability to see the situation as the other side sees it, as difficult as it may be, is one of the most important skills a negotiator may possess. It is not enough to know that they see things differently however. In order to influence the opposition, it becomes necessary to understand empathically the power of their point of view and to feel the emotional force with which they believe in it. This process involves withholding judgement, as their views are tried. This understanding may lead to revisions of views about the situation on hand. This is not to be seen as a cost, but a benefit, as it allows the reduction of the area of conflict (Fisher and Ury, 1991).

Further, one should not deduce other parties' intentions from their fears. Assumptions based on fears lead to misinterpretation. The cost of interpreting whatever they say or do in its most dismal light, spurns fresh ideas in the direction of agreements and subtle changes of position are ignored or rejected. Further, blame should not be passed on the other party, no matter how faulty they seem to be. It is counter productive. Under attack, the other side becomes more defensive. Assessing blame firmly entangles the people with the problem. Separate the symptom from the person. Further, each other's perceptions should be discussed, making them explicit. This may provide the understanding that is required to take each others side seriously. Communicating things voluntarily can be one of the best investments a negotiator can make. Opportunities to act inconsistently with their perceptions, in order to change their perceptions, should be sought after.

Fisher and Ury (1991) recommend that the opponent should be involved in the process of a disagreeable solution. The opponent should be involved early. Apart from the substantive merits, the feeling of participation in the process is perhaps the single most important factor in determining whether a negotiator accepts a proposal. The importance of face-saving is also stressed. This involves making proposals consistent with the opponent's values. Face-saving reflects a person's need to reconcile the stand he takes in a negotiation or in agreements with his principles and with his past words and deeds. This is important because often in a negotiation people will continue to hold out not because the proposal on the table is inherently unacceptable, but simply because they want to avoid the feeling or the appearance of backing down to the other side.

Finally, the discussion stage is also about getting the commitment and terminating the contact. Zimbardo (1990) suggests that what is said should not be accepted and believed before the other party makes a behavioural commitment first. Get the behavioural commitment first, and then attitude will proceed to change after. A constant battle for dominance threatens a relationship; principled negotiation protects it. It is far easier to deal with people when both parties are discussing objective standards for settling a problem instead of trying to force each other to back down (Fisher and Ury, 1991).

At the discussion stage, Fisher and Ury (1991) also support the importance of insisting that the result be based on some objective standard. This is necessary so as to prevent stubborn input from either party, and to encourage fair and objective standards by which to judge a fair solution. Typically negotiators try to resolve stark conflicts by positional bargaining i.e. by taking about what they are willing and unwilling to accept. No negotiation is likely to be efficient or amicable if either parties' wills are put against each other, and either side has to back down. High costs are associated with trying to settle differences of interests on the basis of will. The solution is to negotiate on some basis independent of the will of either side, i.e. on the basis of objective criteria. In short, the approach is to commit oneself to reaching a solution based on principle, not pressure. The more standards of fairness, efficiency, or scientific merit are brought into account to bear on a particular problem, the more likely a final package that is wise and fair will be produced.

Having discussed the process typically followed in negotiations, it becomes important to study the characteristics of effective negotiators. Such an evaluation will provide an understanding of the skills that can be learnt and exercised to improve future negotiations.

3.5 CHARACTERISTICS OF AN EFFECTIVE NEGOTIATOR

The ideal negotiation leader or participant should be able to say "no" effectively; inspire confidence; be ingenious; be able to "take it"; be a patient listener; have a sense of humour; have an appreciation of the economics of the overall situation and be able to organise his thoughts and speak or write with clarity of expression but without being an orator (Morse, 1976). Daniele Vare in Ury (1991: 5) identifies diplomacy as a key characteristic of a good negotiator. She says

> Diplomacy is the art of letting someone else have your way.

Kniveton and Towers (1978) recommend that effective negotiators need to have unlimited patience; they should be persuasive; they should know and understand the people in the negotiation; they should know themselves as well as others know them, i.e. they should be aware of their own abilities and limitations; they should be able to develop good interpersonal relations with other negotiators and should be able to be rigid and stick to their point of view but should be willing to move if necessary. Hersey (1984) describes the successful negotiator as a leader based on the premise that leadership is any attempt to influence the behaviour of another individual or group. When taking charge a leader must have the ability to influence.

Good listening skills are also useful for discovering the needs of constituents, for understanding the case that the other side is presenting, for detecting subtle movement in the other side, and for demonstrating a sense of understanding and concern for them (Johnson, 1993). At the same time active listening, judgement avoidance, disregarding distractions as well as listening for ideas rather than facts, outlining the main ideas, interrupting and probing are also recommended (Johnson, 1993). Apteker and Ord (1999) explain that selling ideas requires listening. Selling ideas in art, and if one wants to excel in it, listening is critical. The idea that being the loudest and the most verbose has long been disproved as an effective mechanism for producing results. If one really wants to cultivate meaningful partnerships, listening is imperative.

Zucker (1994) and Laborde (1987) identify the formula for successful influence as being directly proportional to how closely you pay attention and how flexible one is. Attentiveness is the ability to read another person, situation and underlying clues: it is a human sonar system – a sensitivity to both verbal and non-verbal communication. In other words, to become a master practitioner of the fine art of listening and observing. Flexibility is the ability to shift to an appropriate behaviour, depending on how attentive you are to the verbal and non-verbal the other person is giving you. Mastenbroek (1989) adds that experienced negotiators know how to adapt their style to a particular situation, or to the means which are available to them at the moment, their relation to their constituency, the phase in which the negotiators are, the personalities of the opponents etc.

The effective negotiator should ask as many questions as necessary, in order to confirm his understanding, particularly when final decisions are near, so that agreements are likely to last; he needs to be able to "flag" his behaviour, making it clear what he intends to do, doesn't follow disagreements with counter-proposals and does not weight his argument too much. Too much information and facts merely provide the other side with many opportunities to attack you (Huthwaite Research Group, 1977). Finally, Pinsker (1987) recommends humour as a very practical, enormously powerful tool. Doing business is a human activity, and a sense of humour is an essential ingredient of our humanity (Pinsker, 1987).

It is important to understand that these traits can be learnt, and do not necessarily need to be innately possessed. An effort to learn and adopt the traits discussed above, will undoubtedly assist in negotiations. It is however, important to have an understanding of the social psychology of negotiations. This encompasses an understanding of the underlying needs and motivations of the participants as well as certain subliminal variables that play a role in successful negotiations. These will be discussed below.

3.6 THE SOCIAL PSYCHOLOGY OF NEGOTIATION

The human element is always a key factor in negotiations, no matter what financial or technical matters are involved. Skilled negotiators are well aware that negotiations are influenced by more

than strictly rational and logical considerations. People often act in irrational and unexpected ways. Feelings, attitudes, beliefs and values all play a significant part and must be taken into account (Hawver, nd).

There are several aspects of social psychology that provide useful insights and practical applications in the negotiating situation. Information and knowledge of the people on the negotiating table colour approaches to and behaviour at the bargaining table. Social psychology can also give an indication of the effectiveness of our attempts at persuasion and the relative impact of different patterns of communication. All these factors operate in a wide range of negotiating situations (Kniveton and Towers, 1978). To understand the psychology behind negotiating however, it is first necessary to understand the basic psychology of the human being. This includes an understanding of human needs, personalities as well as social environmental factors. A discussion of these follows.

- **Human Needs**

Needs and their satisfaction are the common denominator in negotiation. If people had no unsatisfied needs, they would never negotiate. The satisfaction of needs motivates virtually every type of human behaviour. McClelland in Robbins (1998) proposed a theory of needs. His theory focuses on three needs: achievement, power and affiliation. They are defined as follows:

- Need for achievement – the drive to excel, to achieve in relation to a set of standards, to strive to succeed
- Need for power – the need to make others behave in a way that they would not have behaved otherwise
- Need for affiliation – the desire for friendly and close interpersonal relationships.

Maslow presents five categories of needs, which consolidate and add to those presented by Mclelland. He depicted the following hierarchy:

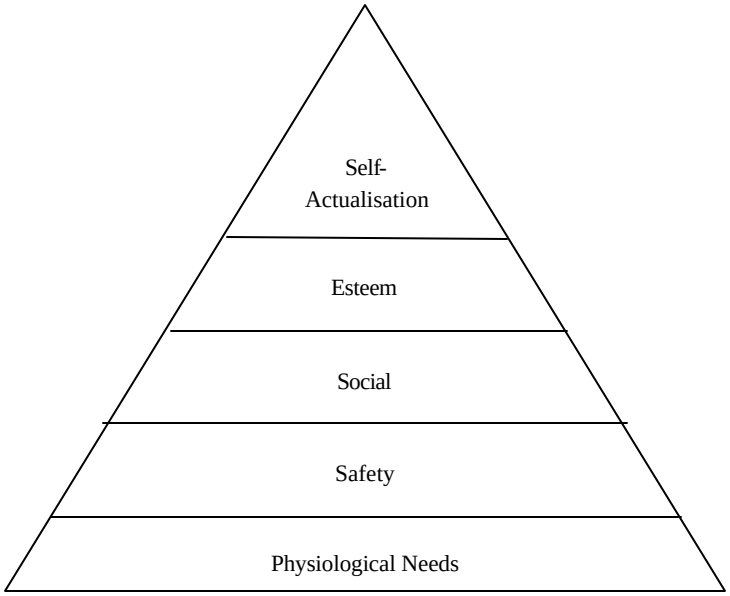


Figure 4 Maslow's Hierarchy of Needs (Robbins, 1998: 170)

1. Physiological needs – includes hunger, thirst, shelter, sex and other bodily needs
2. Safety – includes security and protection from physical and emotional harm
3. Social – includes affection, belongingness, acceptance, and friendship
4. Esteem – includes internal esteem factors such as self-respect, autonomy, and achievement; and external esteem factors such as status, recognition and attention
5. Self-actualisation – the drive to become what one is capable of becoming; includes growth, achieving one's potential, and self-fulfilment.

The premise is that if a specific need is not fulfilled, then one shall not be concerned with any need(s) higher than that on the hierarchy of needs (Robbins, 1998).

Clayton Alderfer reworked Maslow's need hierarchy. The ERG theory evolved, which argues that there are three groups of core needs – existence, relatedness and growth – hence the label "ERG theory". The existence group is concerned with providing material existence requirements. These needs map to the physiological needs depicted by Maslow. Relatedness needs include the desire to maintain important interpersonal relationships. These social and status desires align with Maslow's social need and the external component of Maslow's esteem classification.

Finally, growth needs include the intrinsic desire for personal development. Once again, these needs map to the self-actualisation needs depicted in Maslow's hierarchy. The ERG theory contrasts to Maslow's theory by stating that more than one need may be operative at the same time. It further states that if the gratification of a higher-level need is stifled, the desire to satisfy a lower-level need increases (Robbins, 1998).

Maslow's, McClelland and the ERG theories provide a useful framework for studying needs in relation to negotiations. Leritz (1991) explains that all negotiating is an attempt to meet these primary needs. He explains that as long as basic physical needs in a negotiation are met, co-operation is likely. On the next level, the worth individuals attach to themselves determines how far they will go in a negotiation. In the same vein, the worth they allow the other party to feel goes a long way in determining how co-operative they will be. A lack of confidence in individuals' capabilities results in indifference in trying to achieve co-operation, or it is done in a way that is not effective. The further need to feel affiliated, connected and accepted may to a certain extent contribute to a the degree of success in negotiating. Finally, because people need to experience meaning, purpose and direction in their lives, if something is asked for in negotiations that doesn't make sense to the other party is, it is not likely that they will want to engage in a negotiation. It is therefore imperative to motivate to the other party the reasons for what is being asked. People only co-operate when it makes sense to.

- **Personalities**

Maslow recognised that not all personalities follow his proposed hierarchy. Different personalities might relate more to one dimension than the other (Robbins, 1998). Different personalities will therefore be driven by different needs. An understanding of personality types may therefore assist negotiators in identifying parties' core needs and ultimately steering the negotiation to success. Pierce and Gardner (2002) explain the "Big Five" personality theory. Since the early 1990's this theory became widely accepted that all personality dimensions can be "distilled" into five major classes. These are:

- Extroversion: The degree to which a person is sociable, outgoing, assertive, talkative and expressive.

- Adjustment: The degree to which a person is emotionally stable, secure, content and free from depression.
- Agreeableness: The degree to which a person is polite, trusting, good-natured, accepting, co-operative and forgiving.
- Conscientiousness: The degree to which a person is dependable, organised, thorough, perseverant and honest.
- Inquisitiveness: The degree to which a person is curious, imaginative, artistic, playful and creative.

These broad personality dimensions predict how individuals will respond in negotiations. Leritz (1991) depicts five other distinct personalities which can predict responses and behaviours in negotiations. These include: enforcers, scorekeepers, peacemakers, rebel producers and generators.

Enforcers believe they must use force to get what they need from others. If they can't force what they want, they run away out of fear. Enforcers use threats, demands and intimidation, or avoidance and withdrawal. It is an all-or-nothing approach. Dealing with enforcers requires getting their attention (draw a boundary), explicitly identify their behaviour, help them feel safer, insist on fair principles, invite them to explain, use silence (calm silence communicates power), side-step/ignore personal attacks, extreme demands, take-it or leave it challenges, don't become defensive or invite criticism, refuse to be punished, ask questions, and point out consequences.

Scorekeepers believe that to get what they need they must trick or deceive others. They assume that everyone is out to line his own pocket and will take advantage of them if the opportunity arises. They are afraid of not getting their fair share. They are always planning strategies and keeping score to make sure they have not been cheated. Scorekeepers will use any kind of manipulation or game to get what they want. If their strategies do not work, they resort to bargaining and may attempt to achieve 50/50 compromise. The primary rule for dealing with scorekeepers is to negotiate the process and criteria for settlement before talking about the specific content. The objective is to lock them into fair processes and standards before you begin.

A second response is to name their game – explicitly reveal their tactics. Exposing their strategies results in ineffective negotiations.

Peacemakers believe that they must earn what they want by pleasing others, by taking care of others, and by not making waves. They believe they must meet other's expectations and that if they can take care of others, others will be obligated to take care of them. What other people think of them is important to Peacemakers. They attempt to earn what they want by caretaking, pleasing, accommodating, avoiding conflict, denying their anger, rescuing and being appropriate. Dealing with the peacemaker requires that you do not feel guilty or obligated, or pitiful. Be persistent, telling them directly what your demands are, no matter how difficult is to confront them, listen for incongruity between their words and their behaviours or voice tone. Point out the incongruity.

Rebel Producers believe that the best way to get what they need is to be independent and do it themselves. They believe the price of earning someone else's approval is too high, so they dismiss everyone and try to prove they can take care of themselves. Rebel Producers act tough, push against traditional ways, challenge authority, work hard, do it all themselves, and feel impatient. It is important not to take these rebels too seriously. Melt them with warmth and humour, help them translate their either/or thinking into and/both thinking. Find your common ground instead of focusing on your differences. As they tend to get impatient and want immediate results, do your homework beforehand.

All of the above have some limitations. Enforcers wipe others out and eliminate the possibility of an ongoing relationship, so they withdraw and do not get anything. Scorekeepers can get results if they are good strategists and hustlers, but their approach invites lack of trust. Peacemakers tend to have good relationships. Everyone likes them, but they continually give up what they need in order to please others. Rebel producers tend to be productive and achieve a lot, but they have to do it themselves and others feel dismissed by them. In all these approaches Leritz (1991) recognises that there is a tendency to function from a position of scarcity, where the fear exists that others cannot be trusted, relied upon in time of need, and even that what is being asked for cannot be provided. The fifth option provides greater benefits.

Generators are generative in the sense that their self-trust becomes a source of intrinsic power and energy. They empower themselves because of their self-acceptance. Because they believe they are more than enough, they act in the same manner. They are less defensive and more trusting. This, in turn invites others to be less defensive and more trusting. As a result, generators empower not only themselves, they also make it easier for others to function more pro-actively and effectively. Generators believe that people are not right or wrong, good –or bad – they simply have needs. They believe every person has a right to what he needs and that there is more than enough to go around. To get what they need, they attempt to negotiate with others to find solutions that will meet each person's needs.

Zartman and Berman (1982) and Greenlagh et al (1985) agree that personality and attitudes have a fundamental role in shaping the way negotiators act and react. Hawver (nd) presents a model that depicts four personal characteristics of business people. These characteristics can be mapped onto those provided by Leritz (1991).

COOPERATION	CONFLICT
GIVING	TAKING

Figure 5 The Four Cornerstones of Negotiations Hawver (nd: 10)

Some individuals are more readily co-operative than others. Those that seem to enjoy conflict, fall into Leritz's (1991) "Enforcers" category. Some are very generous, and others appear much more ready to take than to give. Givers are a distinct minority. They are more than ready to give in to others and to co-operate These people fall amongst the "Peacemakers" in Leritz' (1991) personality categorisation. They are idealistic people who gravitate toward religious and social welfare types of service occupations. Few succeed in the business world. Most business people

are Givers and Takers. They are willing to give as well as to take, to co-operate with others when they can, and conflict with others when they have to. Finally, there is a significant minority of the takers. These people find it easier to take than to give, and enjoy conflict for a variety of reasons. They can be extremely successful in business if they concentrate on short-term relationship businesses. Dealing with the takers is a challenge for a skilled negotiator and one that requires the application of certain techniques (Hawver, nd).

From the above discussion, it becomes apparent that it is important to know what type of person one is dealing with when negotiating.

- **Social Dynamics**

Besides needs, motivations and personalities, Whitten et al (1994) recognise the important role social dynamic factors play in meeting set-ups. Social perceptions, social interactions, seating arrangements and group size need to be considered.

(a) Social Perceptions

The Conflict Research Consortium (nd) explains that perceptions are vastly coloured by attitudes and experiences. If past experiences of negotiating have shown, for example, that it is a situation where both sides are hostile towards each other, then the individual will, when negotiating in a new setting, look for any evidence which supports his past experiences. The implication is that first impressions significantly affect behaviour, and a considerable amount of exposure is required before these impressions are unlearnt should they be false. There is often little opportunity for unlearning and relearning, and by the time it is actually done, much damage has already been caused (Conflict Research Consortium, nd).

Sometimes, preconceived opinions are more difficult to anticipate and to control than others. Differing cultures, for instance, present a real challenge at negotiating tables. Cultures provide people with ways of thinking, ways of seeing, hearing, and interpreting the world. Thus the same words can mean different things to people from different cultures, even when they talk the "same" language. When languages are different, and translations are made, the potential for

misunderstanding increases, and secondly, even when languages are the same and cultures differ, different ideas and perceptions can be conceived (Conflict Research Consortium, nd).

Another variable that affects people's perceptions is the disposition to stereotype or even to discriminate between individuals. Classifying individuals into a predefined set of criteria, without giving them much chance to express a true picture of what they represent, and discriminating between individuals of differing races, religion or sex are challenges that are still very much alive in the workforce, and in negotiations (Curran and Takata, 2000).

From the above it can be said that it is exceptionally important to note how a background knowledge of the factors which influence social perceptions are to the individual negotiator. It is only when the factors that affect perceptions are considered that there is some small chance of standing back and looking at issues with a semblance of dispassion. Objectivity in itself is no panacea, but at least it is a small step towards a more truly representative view of a situation and the people in it (Kniveton and Towers, 1978).

(b) Social Interaction in Negotiations

In any direct interaction between parties, there exist both verbal and non-verbal cues (Kniveton and Towers, 1978; Sperber, 1983; Calero, nd). Gestures accompanied by spoken words are either congruent or incongruent with what is said. When gestures do not match what is being said, people tend to mistrust you. The process of reading people starts the moment the negotiators walk through the door. Non-verbal communication gives you clues about taking action or making changes.

Whitten et al (1994) suggest that systems analysts should care about body language and proxemics. Body language is all of the information being communicated by an individual other than their spoken words. Research studies have determined that of a person's feelings, only 7% are communicated verbally, 38% are communicated by the tone of the voice used, and 55% of those feelings are communicated by facial and body expressions. In addition to the information communicated by body language, individuals also communicate via proxemics. Proxemics is the relationship between people and the space around them. Proxemics is a factor of communications

that can be controlled by the knowledgeable analyst. People still tend to be very territorial about their space. Whitten et al (1994) recommend that a good analyst should be aware of spatial zone which may involve any of the following zones:

- Intimate zone – closer than 1.5 feet
- Personal Zone – from 1.5 to 4 feet
- Social Zone – from 4 feet to 12 feet
- Public Zone – beyond 12 feet.

Certain types of communication take place only in some of these zones. For example an analyst conducts most interviews with system users in the personal zone. But the analyst may need to move back to the social zone if the user displays any signs (body language) of being uncomfortable. Sometimes increasing eye contact can make up for a long distance that can't be changed (Whitten et al 1994).

Kniveton and Towers (1978) suggest that one of the important social skills of a negotiator is the ability to attract attention to one's self and influence other people. Many techniques exist to draw attention to oneself. These include: standing up, rising up so as to be seen by all, holding papers showing that his speech is supported by evidence, doing something dramatic, like banging a hand on the table may draw attention, or to point a finger to demonstrate a point, or point a pencil, which is also an extension of the finger, and which has the added benefit of giving the impression you are in control (Kniveton and Towers, 1978).

Matthies (1976) maintains that equal attention should be paid to the words used to communicate, both oral and written. The wrong words at the wrong time, no matter what their intention, is critical to systems development. Especially the systems analyst must effectively communicate with a diverse group of system users, owners and builders. Matthies (1976) identified two categories of terms that influence managers: benefit terms and loss terms. Both can be used to sell ideas. Benefits terms are words or phrases that evoke positive responses from the audience. They can be used very effectively to sell proposed changes. Managers will usually accept ideas that produce benefit terms such as increased productivity, reduced inventory costs, increased

profit margin, improve customer relations, increased sales and reduced risk. People like to feel they are part of the system development effort. Matthies (1976) explains that people are rewarded by words of appreciation for their time and effort. Words should be carefully chosen to show respect for people's feelings, knowledge and skills. "Loss-terms" on the other hand are words or phrases that evoke negative responses from the audience. Loss terms can also be used very effectively to sell proposed changes. Managers will usually accept ideas that eliminate loss terms such as higher costs, increased processing errors, higher credit losses, excessive waste, higher taxes, delays and increased stockouts).

Communication problems are further intensified by language differences, even if the speakers have some knowledge of the others' language. Language is much more than words; it is also a way of thinking and seeing and defining the world. As a result, accurate translation, especially of abstract ideas, is very difficult. When this problem is added to all the other problems of communication during conflicts, situations can get very difficult to manage, and the chances for misunderstanding are extremely high. Further, communication problems arise due to different cultures regulating the display of emotion differently. Some cultures get very emotional when they are debating an issue. They yell, they cry, they exhibit their anger, fear, frustration, and other feelings openly. Other cultures try to keep their emotions hidden, exhibiting or sharing only the "rational" or factual aspects of the situation. All of these differences tend to lead to communication problems. If the people involved are not aware of the potential for such problems, they are more likely to fall victim to them, although it takes more than awareness to overcome these problems and communicate effectively across cultures (Conflict Research Consortium, nd).

(c) Seating Arrangements

There are a number of reasons why seating arrangements can affect the behaviour of individuals. Firstly, participants vary in status and tend to select positions that reflect this status. Secondly, the position selected affects the influence the member has over the meeting, and thirdly, the seating arrangements affect the flow of communication. Experimental studies have shown that, when they are free to choose, persons of high status select the seat that suits their status. Studies have also shown that seating arrangements affect the outcome of negotiations primarily because

the whole communication pattern is affected (eye contact, body language etc.). It is obvious that hard and fast rules governing seating are impractical, but an awareness of the consequences of certain arrangements should at least enable participants to organise themselves in the most suitable manner for the type of negotiation they envisage (Kniveton and Towers, 1978). Zucker (1994) contributes on the importance of body posture and gestures skin colour changes, minute muscle changes, lower lip changes, breathing changes and voice pattern that may give an indication on what the opposition is concealing or revealing.

(d) Group Size

The larger the group, the less effort expended on average by any individual member. Individuals, who are members of a small group, exert more influence than those in a large group. An individual in a small group can easily communicate with, and influence a larger group on one side of the table. Those in the larger group can only attract the attention of and influence smaller number of people on the other side of the table. Another disadvantage of large groups, is the inability of every participant to contribute. This leads to agreements to something, which has largely been decided by other people. Smaller groups have the satisfaction of contributing equally and have their voices hear. In this way no one has a grievance of being denied the opportunity to speak (Kniveton and Towers, 1978). Consider negotiating using a team or an individual. Individuals are better in that they can make decisions without having to worry about the team's differing opinions. Also pay attention to the site you choose to negotiate. Holding the negotiation at your site may give you a psychological advantage (Hermone, 1974).

Having discussed the social psychology of negotiating, the necessary tools to execute a successful negotiating are now required. The important thing to understand is that these tools can be used at any time during negotiations to support the already learnt negotiating skills and used together will strengthen any negotiation. The following section will discuss the tactics and strategies that can be used to empower team members to achieve a win-win negotiation.

3.7 TACTICS AND STRATEGIES

3.7.1 Tactics and Strategy Defined

Ertel (1999) has very rarely found companies that think systematically about their negotiating activities as a whole. Instead, they take a situational view, seeing each negotiation as a separate event, with its own goals, its own tactics and its own measures of success. That approach can produce good results in particular instances, but it can turn out to be counterproductive when viewed from a higher, more strategic plane. The outcome of a negotiation should not hinge solely on the negotiators individual skills. Negotiation should and can be co-ordinated and supported like any other function.

Kochan and Jick (1978) explain that there are techniques or tactics and strategies which negotiators can employ in order to ensure a successful mediation intervention and achieve settlement, albeit difficult to conceptualise and measure them. Strategies are long-term moves to achieve objectives. A strategy is an overall plan, approach, or method a negotiator has for resolving a dispute. Nierenberg (nd) defines tactics, on the other hand, as short-term moves that implement the chosen strategy. Lewicki et al (1997) adds that they are subordinate to strategy as they are directed and driven by strategic considerations. A tactic is simply a technique for achieving strategic objectives. Hirchowitz (1995) contributes that it is the behavioural manifestations of various strategies; the operational, and observable behaviours that characterise each strategy.

The strategies and tactics the negotiator uses are what give negotiation its individual characterisation and its reputation for being an "art" unsuited for systematic analysis. Given the rudimentary understanding of the strategies or tactics, this scepticism is partly justified. Nevertheless, several theories have been proposed with regard to negotiator behaviour. Researchers have recognised the numerous techniques negotiators should have and have thus attempted to categorise them into different types of strategies (Hirchowitz, 1995; Kolb, 1995). A discussion of these follows.

3.7.2 Negotiation Strategies

Planning a negotiation encompasses the considerations and choices made about tactics, resource use, and contingent responses in pursuit of the overall strategy – how to proceed and how to use the available resources to get what is desired. It is clear that planning produces strategies and tactics, but how are strategy and tactics related? Although the differences between strategy and tactics may seem hard to define, three major differences are scale, perspective and immediacy. Tactics are short-term, adaptive modes designed to enact or pursue broader (or higher level) strategies, which in turn provide the stability, continuity, and direction for tactical behaviours (Lewicki et al, 1997). Atkinson (1980) distinguishes between tactics and strategies. He explains that a negotiation can be all strategy and no tactics. This refers to a formulated strategy for achieving an overall objective, but when the actual negotiation takes place, the party finds itself unable, through lack of expertise in the tactics of negotiation, to put the well-laid plans into operation. Conversely, a negotiation can be described as all tactics and no strategy (Hirchowitz, 1995).

Scott (1988) supplies a negotiation model which illustrates that all negotiations revolve around subject-matter. The subject matter depends on a number of foundations, one being the content of the negotiation i.e. who negotiates, how and why. This is covered in the procedures the negotiator chooses to adopt. The subject matter and the procedure are influenced strongly by the climate of the negotiation (the people, the dynamics of the seating etc.). At the bottom level of these foundations, yet conducted in advance, is the way the thinking of the negotiation is organised. This is influenced by the preparation of the negotiation and finally follow-up follows at the end of the negotiation to ensure successful negotiating in the future.

Strategies vary on a number of different dimensions, including voluntariness, structure, informational locus and opportunism (Lewicki et al, 1997).

- *Voluntariness*: A voluntary strategy is based on choice: what to pursue, how to pursue it, or even whether to have a strategy at all. Alternatively, a strategy may be imposed by superiors or by external forces. Voluntary and imposed strategies differ primarily in the amount of involvement or discretion the directed party has in designing, pursuing or

amending the strategy. The more voluntary the strategy, the more you empower the other side by allowing them to buy in and create co-ownership of the final product. However, if you expect strong opposition from the other side, you may want to move toward imposition.

- *Structure*: Strategies also may be more or less structured. When structure levels differ, the trade-off is between control and adaptation. Highly structured strategies provide firm guidelines, controls, and a sense of direction and certainty; close adherence to such strategies however may prevent negotiators from responding and adapting to new information and opportunities that were unknown or underestimated when the original strategy was formulated. Having too little structure fails to provide the control necessary to guide decisions and direct the application of scarce resources. The dangers here, then, involve the extremes of too much structure or too little.
- *Informational Locus*: Strategies prepared before negotiations begin are often unilateral, or one-sided, in that they reflect a certainty about one's own strategy, but only an educated guess (if that) about the other party's strategy. Improved information may emerge as the negotiation proceeds, making strategic corrections or adaptations advisable and possible. Negotiators who are able to adapt their intended strategies early in a negotiation appear to achieve better outcomes.
- *Opportunism*: Not having a particular strategy is itself a form of strategy. When done intentionally, this may be called an opportunistic, adaptive, or emergent approach, and it enables negotiators to evaluate and exploit opportunities as they recognise them. Extreme forms of this strategy can be dangerous. Too little responsiveness to changing information and situations may bind negotiators to strategies that no longer work.

Lewicki et al (1997) derived the following model to illustrate the choice model of Negotiation Strategy:

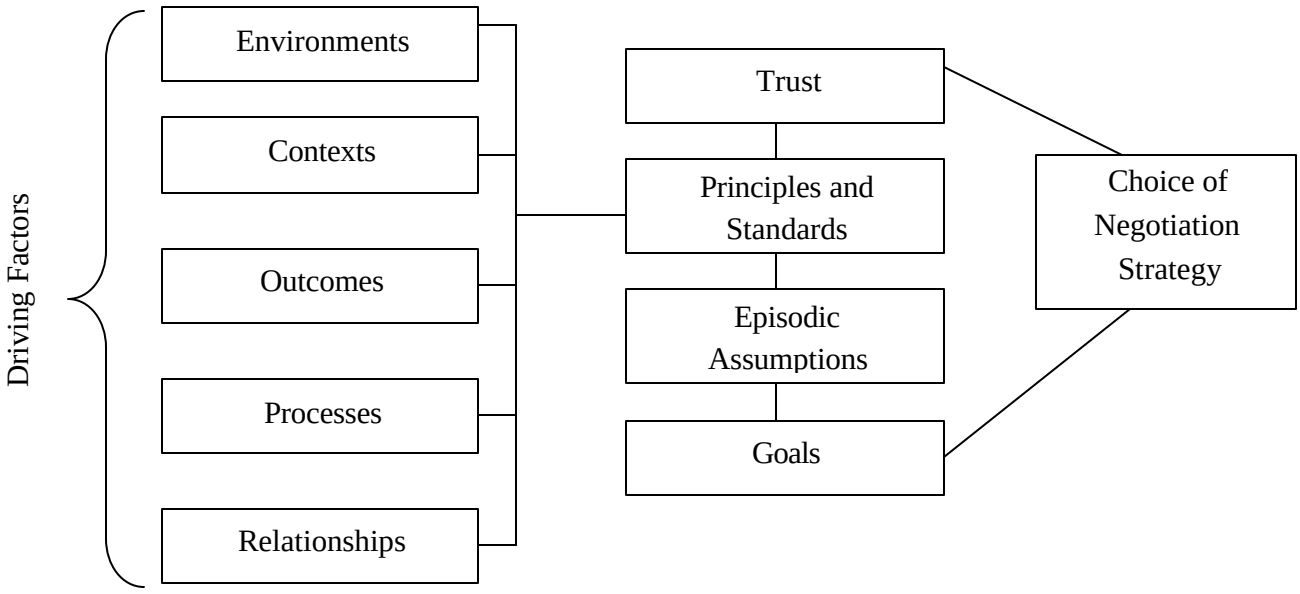


Figure 6 Model of Negotiation Strategy (Lewicki et al, 1997:93)

The Choice Model of Negotiation Strategy proposed by Lewicki et al (1997) is a general model of the process of choice of negotiation strategy, and includes at least five elements: Driving factors, principles and standards, trust, assumptions about the episodic nature of the process and negotiation goals. These elements relate to each other as shown in the figure 6 above.

Principles and Standards are important in the choice of an suitable negotiation strategy as this component of the model involves guidelines for desires and expectations about how the negotiation relationship will be established, conducted, and continued. Principles and standards play a significant role in the choice of negotiation strategy because they help classify behaviours, procedures, and outcomes as acceptable or unacceptable. Examples include a commitment to tell the truth and maintain integrity, a belief about when competition or collaboration is appropriate to pursue, a commitment to be civil during negotiations. Principles thus help determine what approaches negotiators choose, avoid or ignore; they are often personal values related to co-operations or competition and the way one believes people should be treated. In contrast, standards help set boundaries for negotiation outcomes, processes, and behaviours by providing ways to choose among various options that make up the broader, more basic personal principles. Objective standards may also be used to decide how to divide or allocate outcomes, but deciding

on which objective standards will be used or how they will be applied can also be a critical part of the negotiation itself (Lewicki et al, 1997).

Negotiation Goals : Negotiators should specify their goals and objectives clearly. This includes stating all the goals that are to be achieved in the negotiation, determining their priority, identifying potential multigoal packages, and evaluating the possible trade-offs among them. Goals may also include intangibles such as maintaining precedent or getting an agreement that is satisfactory to both sides. Five aspects of the impact of goals on negotiation are important to understand:

- Wishes are not goals, especially in negotiation. Wishes may be closer to interests or needs that motivate goals, but they are not goals themselves.
- Our goals are linked to the others' goals; the linkage between the two parties' goals defines an issue to be settled.
- There are boundaries and limits as to what our goals can be. If what is wanted exceeds these limits (i.e. what the other party is capable of or willing to give), goals must be changed or the negotiation ended. Goals must be reasonably attainable.
- Effective goals must be concrete or specific, and preferably measurable. The less concrete and measurable they are, the harder it is to communicate to the other party what is wanted from both sides and to determine whether any particular outcome satisfies the predefined goals.
- Goals can be tangible as well as intangible (Lewicki et al, 1997).

Zucker (1994) describes goals as getting to uncover the reasons why people are negotiating. Sometimes this may not be as easy as it appears. Some guesswork might be required, or alternatively a bit of probing.

Episodic Assumptions : Some goals can be attained in the short-term, in a single negotiation session. However, because such goals are also pursued infrequently, the negotiation tends to be viewed as a single episode – a single defined event, without future consequences. This episodic assumption has, in turn, a distributive effect on negotiation strategy choice; the relationship with the other party tends to be ignored completely in favour of a simplistic concern for achieving

only the substantive outcome. The sole pursuit of a substantive goal often tends to support the choice of a distributive or competitive strategy. Other negotiation goals, often more complex or more difficult to define, may require initiating a sequence of negotiation episodes. In these cases it is expected that progress will be made incrementally, and that progress may depend on the prior establishment of a strong relationship with the other. Such relationship-oriented goals should motivate the negotiator towards an integrative strategy choice; the relationship with the other party should be valued as much (or even more than) the substantive outcome. Thus relational goals tend to support the choice of an integrative, or collaborative strategy (Lewicki et al, 1997).

Trust: Trust is a complex concept in itself. In negotiation, trust is more specifically derived from the past experience with another person, knowledge of that person' actions with other opponents, and expectations regarding how likely this person is to behave co-operatively in an upcoming interaction. Trust acts on strategic negotiation choice both directly and indirectly (through the formation and consideration of principles and standards). The direct effect involves deciding how much the other party in a specific negotiation can be trusted to do (or not do). The effect on choice is direct in that it reflects beliefs about a particular, impending exchange. Trust also affects choice indirectly, through its direct effect on the negotiator's principles and standards. Beliefs and expectations about trust colour and shape principles in a global or general sense, and through them provide a filter, or test, that the negotiator applies to strategy choice. The difference between the direct and indirect effects of trust on strategy choice reflects what should or ought to happen, and what most likely will happen with a particular opponent, respectively. As most of us have experienced, it is possible to perceive a difference between beliefs and expectations (Lewicki et al, 1997).

Driving Factors: How negotiators interpret, act on, or react to these elements generates the principles and standards that ultimately drive their choice of negotiation strategy.

- ***Environments*** are the general settings within which events take place. In negotiation, environments include communities, industries, family groups, corporations and so on. Environments differ in the cultural and behavioural norms that shape the conduct of

negotiations and determine what is appropriate and inappropriate conduct and action. They can affect the climate, or tone of negotiations.

Zucker (1994) explains that the environment can be divided into two separate categories: external and internal. External environmental factors such as the economic climate (inflation, interest rates, wage levels, gross domestic product as well as macro-economic policies), political conditions, the social climate and technological advances play a significant role in negotiating outcomes. Internal environment factors such as power (the ability to influence someone), communication (the ability to present a case coherently, and in such a way that a common understanding is achieved) and organisational culture (values, norms, and beliefs of individual members) vastly contribute to the outcome of negotiations and the negotiation process itself (Venter, 2003).

- ***Contexts*** are the various situational settings that mark actual negotiation episodes within any given environment e.g. within a given industry, management may negotiate frequently with suppliers, customers, regulatory agencies, and labour organisations. Each of these represents a different context within a single environment, and the contexts may differ from each other in ways that affect norms and expectations of outcomes, processes and relationships.

- ***Outcomes*** are the effects that results from past negotiations have on subsequent exchanges. These include the results of a given negotiation on both the current substantive issues and on the current relationship between the negotiating parties. Zucker (1994) refers to outcomes as the record. What does the record or history dictate about current negotiations.

- ***Processes*** are the vehicles, methodologies, and behaviours by which the negotiation takes place – the "how" of the activity or the play of the game. Processes can have both an environmental and historical effect. Environmentally, processes reflect and predict the negotiation climate and norms that are generally expected. Historically, specific past

processes have an effect on future exchanges in much the same ways as goals, as mentioned above.

- ***Relationships***: are the connections and associations among the negotiating parties, as well as those among the parties and their various constituencies. For example, a customer may have trouble expecting anything different out of a supplier who has been very powerful in the past and who has always dictated the price and product availability to the customer. Frequently negotiators also must be concerned with their relationships, considering expected norms and appearances, or constituency effects. Constituency expectations and accountability often drive negotiators to do (or not do) things in dealing with other negotiators that would not be issues if the constituencies did not exist or made no demands.

The Negotiation Strategy Choices reside at the business end of the model (the right). The focus here is on the unilateral choice of a strategy. Unilateral means making a choice without the active involvement of the other party. A reasonable effort to find out about the other party and to incorporate that information into the choice of a negotiation strategy is always useful.

A negotiator's unilateral choice is reflected in his views of two simple issues: concern about the other party's outcome, and concern about own outcome. The answers to these questions result in a mix of strategic alternatives depicted in figure 7 below (Lewicki et al, 1997; Fells, 2000).

		Concern about Personal Outcome: Low	Concern about Personal Outcome: High
Concern About Oppositions Outcome	High	Accommodation/ Yield	Compromise/ Problem Solve
	Low	Avoidance	Competition/ Contend

Figure 7 Model of Negotiation Strategy (Lewicki et al, 1997: 39)

The power of this framework lies in requiring the negotiator to first determine the relative importance and priority of the two dimensions in the desired settlement. Answers to these two simple questions suggest at least four types of initial strategies (called Situational Strategies) for negotiators:

- *Avoidance*: this is an option where there is indifference regarding one's own and the other party's outcomes. By definition, avoidance is non-negotiation; however it may serve a number of strategic negotiation purposes i.e. all your needs and interests can be met without negotiating; the desired ends are not worth the often considerable time and effort of negotiation; there are one or more acceptable alternatives to a negotiated agreement, or the BATNA (Best Alternative to a Negotiated Agreement) is weak or non-existent (Lewicki et al, 1997).

- *Competition*: this is an option when there is an overpowering interest in achieving own outcomes- getting this deal, winning this negotiation, with little or no regard for the effect on the relationship and subsequent exchanges with the other party. Competition is also known as distributive, or win-lose, bargaining. This option is voted for when:

- a party places high value on the claim and has a good case
- there is no time pressure
- there is little concern for future interactions
- there is little concern for the other negotiator's outcomes
- there are clear alternative solutions
- the other party is expected to concede (Fells, 2000).

- *Accommodation* may be an option where there is a strong interest in achieving only the relationship outcomes – preserving or enhancing a good relationship with the opponent. Like competition, accommodation is a win-lose strategy, though with a mirror image. It involves an imbalance of outcomes but in the opposite direction. Accommodation is often used when the major goal of the exchange is to build or strengthen the relationship with the other party, and the accommodator is willing to make a sacrifice regarding the substance of the negotiation (Lewicki et al, 1997). Fells (2000) explains that the Accommodation approach is selected when:

- A party places high value on reaching agreement but is not committed to their claim
- There is time pressure
- Future interactions with the opposition is expected
- There is genuine concern for the other negotiator's outcome
- There are no clear alternative solutions and
- The other party is expected to contend.

- *Compromise:* becomes an option when both parties' outcomes are important to the negotiator. In this case, the negotiator should pursue a compromising strategy (Lewicki et al, 1997). Fells (2000) explains that the a party opting for the compromise strategy:

- places a high value on the claim
- expects future interactions with the other negotiator
- has concern for both parties' outcomes and
- expects that if both parties adopt contending strategies, the negotiation will deadlock.

Fells (2000) however clearly explains that there are two distinct forms of compromising: "Clear Cut Compromise Choice" and "Creative Compromise Choice". In the "Clear Cut" option, the party believes the opposition's offer is unacceptable, and that the only clear alternative is "the middle ground" or "splitting the difference". It is most likely in this form of compromise that the opposing party will respond by moving towards the "middle ground". The "Creative Compromisor" however believes that alternatives can be found, and expects the opposition to respond by also looking for alternatives.

Atkinson (1980) further explains that there are four broad categories of strategies that are most likely to be common to the majority of situations: opening moves; the zero movement position, increasing bargaining power and the sanction.

(a) *Opening Moves:* the strategy revolves round the expectation that each side should normally be prepared to move from its original position. The Overall strategy of the opening move – demand and offer – more often than not sets the course for the rest of the negotiation. It is not overstating the case to say that the outcome can be determined by the opening demand and the offer relating to it – a mistake at this point cannot be corrected later without some loss being incurred. The initial demand is crucial in that it determines the sort of game that will be played.

(b) *Strategy of Non Zero Movement Position*: This refers to a side that has no movement available at the beginning of negotiation, or when the movement it can undertake is insufficient to resolve the issue on an equal movement basis (meeting half way), even by stretching that principle to the utmost.

(c) *Increasing Bargaining Power:* It may be possible in the position of zero movement to strengthen your position, or to weaken his. This can be done by delaying negotiations until a stronger position has been reached, attempting to structure the expectations of the opponent's supporters in favour of the settlement area which is open to you, initiating action in another area which will increase the costs to the opponent of disagreeing with your offer or link the

issues under discussion with much wider issues which though not of immediate importance to opponent could be to his longer term disadvantage.

(d) *Sanction:* though a sanction usually represents a cost to both sides, it may be instituted in the hope that it will have the effect of drastically altering the bargaining spectrum of the opponent.

What should be noted is that these strategies presented here are pure in form, which is at odds with the mixture of issues and motivations that actually characterise the conduct of most negotiations. Actual strategies should reflect the mixture and diversity created by the driving factors and other contents of the choice model. Johnson (1993) also recognise these as primary strategies, but notes that if negotiators do not recognise what strategy the opponent is adopting, they will not have prepared a good plan of counter strategies to employ, and the opposition will take significant advantage. The strategy that is adopted will be a combination of offensive and defensive ploys: offensive in that a party will attempt to achieve his overall objective, and defensive in that he will also attempt to deny their opponent achieving theirs (Atkinson, 1980).

3.7.3 Which Strategy to Opt for

Negotiators use different strategies depending on the circumstances of the dispute. Lim and Carnevale (1990) identified five types of dispute problems, namely: hostility between disputants; disputant resistance to negotiation; internal problems with a disputants' own party; the existence of a small set of key issues or principles around which the dispute revolves; and problems involving disputant comparisons of their positions to those parties in other similar disputes. Lim and Carnevale (1990) concluded that it is reasonable to suppose that mediators classify strategies and outcomes into different types; they identify a variety of dispute sources and then apply appropriate strategies towards the impasse, thereby establishing contingencies among these types. Negotiators tend to select or anticipate outcomes of disputes and select strategies that are likely to achieve that outcome (Wall, 1984).

Negotiators tailor their strategies to the particular dispute characteristics by surveying the conflict as well as the setting, and then selecting their tactics to fit the situation (Kressel and

Pruitt, 1985). This is termed the contingency approach. There is however the non-contingent approach whereby negotiators use some relatively systematic activities in disputes. Non-contingent strategies refer to the more common or general principles of negotiation that negotiators are thought to take on. They involve preliminary tasks which the negotiator performs, including gaining the trust and confidence of the parties, the search for information regarding the causes of the dispute, and assessing the underlying attitudes of the parties toward their adversaries (Kochan and Jick, 1978). Once enough information is uncovered to make a preliminary diagnosis of the impediments to the dispute, the task of the negotiator then is to choose a strategy that is responsive to the dispute situation. Thereafter, the negotiators must select the appropriate tactics to support the strategic objective.

3.7.4 Tactics

As discussed in Section 3.7.1 tactics are short-term, adaptive modes designed to enact or pursue broader (or higher level) strategies, which in turn provide the stability, continuity, and direction for tactical behaviours (Lewicki et al, 1997). Kolb (1983) makes a few points about tactics:

(a) Tactics are operational. They are concrete behaviours that may be observed
(b) As behaviours, tactics have no meaning in and of themselves. They can only be understood in the context of the strategy i.e. tactics are the behavioural specifics of strategy
(c) Although one observes much variability in the use of tactics, there are patterns that can be observed. Consistent with strategy, a mediator will tend to emphasise certain types of tactics and time their use in particular ways. By observing these patterns, one can infer the strategy that underlies them.

Kressel (1972) identified three primary types of negotiation tactics, namely Reflective, Non-directive and Directive. Reflective tactics involve behaviours by which the negotiator attempts to orient himself/herself to the dispute and to establish the foundations upon which his/her later activities will be built. Examples of such tactics involve allowing the disputants to blow off steam, dealing with constituent problems and building rapport with the disputant. Non- directive tactics are used to modify the dispute environment or address procedural matters to allow the

disputants an opportunity to resolve their dispute with minimal direct intervention by the negotiator (Hirchowitz, 1995).

These tactics include controlling the bargaining structure and timing, simplifying and clarifying the issues, educating the parties about impasse procedures and pacing the negotiations. Finally, directive tactics involve strategies by which the mediator actively promotes a specific solution or attempts to pressure or manipulate the parties directly into ending the dispute by focussing on the Substantive issues. Examples of such tactics are pressing the parties to make concessions, suggesting particular settlements, arguing one party's case to another, trying to change the parties' expectations and threatening to withdraw from the negotiation (Hirchowitz, 1995).

- Kressel and Pruitt (1985) later refined and relabelled directive tactics as substantive tactics, and non-directive tactics as contextual tactics. Lim and Carnevale (1990) found that two of the tactic types (contextual and substantive) could be further subdivided into more specific categories. Contextual tactics should be subdivided into two types: contextual/trust and contextual/agenda. Contextual/Trust emphasises activities important in building trust among the disputing parties and the negotiator and include tactics such as formulating clear goals prior or during negotiation and developing trust between the parties. Contextual/agenda involve tactics designed to manage dispute agendas and include tactics such as helping establish priorities among the issues and arranging the agenda to cover general issues before specific issues. Substantive tactics could be divided into three types, namely, pressure tactics (substantive pressing), tactics that help the parties save face (substantive face-saving) and tactics that involve proposing specific suggestions for settlement (substantive suggestions).

Anstey (1991) provides a different classification of tactics. A discussion of these follows.

1. *Issues-Arguments Tactics:* Tactics in this category focus on the issues on the table. They include:

- showing up weaknesses, inconsistencies, omissions and incorrect assumptions in arguments;

- demanding justification of demands or positions;
- providing additional information, using comparisons, avoiding argument dilution, and pointing out the positive consequences of own proposals/negative consequences of other's proposals.

2. *Process Tactics*: These are directed at changing the order, direction or pace of the negotiations in an attempt to achieve leverage over the other party. They include:

- controlling the agenda
- delaying indicating a position
- avoidance of issues
- red herrings
- asking for time to achieve a new mandate/report back to constituencies and
- keeping issues open.

Hawver (nd) argues that Control Tactics are critical process tactics, which are designed to limit freedom of action and room to manoeuvre. A discussion of each follows:

Tactic	**Explanation**
Agenda Control	This is a universal tactic, which normally takes two forms: control of agenda items, and control of procedures. If the other party controls both the content and the process of the negotiation, then you will be at a tactical disadvantage. For this reason it is important to pay special attention to the negotiable items (included and exclude), the parties participating, proposed role of all parties participating, minute taking, proposals regarding the scheduling of meetings, and venues of meetings.
Limits	Citing limits is frequently used as a tactic to reduce the area open to negotiation. Resources, of course, do have their limits. But the other party cites those limits when it is to their advantage and to the other's disadvantage. Some typical limits include citing limits of authority, policy limits, financial limits, technological limits and legal limits.

	Limits however, can change. And anything that can change is subject to a negotiation. You drastically limit your options when you simply accept stated limits as ultimate limits.
Precedent	Negotiators frequently employ an appeal to precedent to place the current negotiation within the pattern of other negotiations (either industry patterns or previous negotiation patterns with the same party), when it is to their advantage. To counter these tactics, you must try to show that the precedent is not always a relevant model.
Time	Either party may try to control the time available for negotiations to its advantage (expanding time, or putting time pressure).

Table 1 Tabulation of Process Tactics

3) *Obstructive Tactics:* Lewicki et al (1997) maintain that Obstructive Tactics are deliberately used to stall the process by rendering it unworkable, attacking individuals on the other side, or eroding unity in the other's team. They may include:

- extreme demand or offers: This is illustrated by the well-known Highball/Lowball tactic, whereby the negotiator starts with a ridiculously high (or low) opening offer. Such an offer will cause the other party to re-evaluate his opening offer and move closer to resistance point. The danger with this tactic is that the other party will halt negotiations if they think they cannot match the initial offer in the case of a highball, or if they think negotiating is a waste of time of it is a lowball.
- single or overloaded agendas;
- not bargaining honestly on the issues on the table (hidden agendas);
- non-negotiable demands;
- refusals to justify or explain demands or positions;
- early use of threats or actual sanctions;
- emotional outbursts: this may include intimidation, anger or fear, used to intimidate the other party to agree to some terms

Anstey (1991) contribute the following obstructive tactics:

- incorrect summaries;

- focus on emotionally upsetting areas making the other feel inferior or dependant, inexperienced, incompetent etc.
- active use of irritators;
- refusal to acknowledge finality of agreements; and
- walkouts.

Other obstructive tactics suggested by Acuff and Villere (1990) are outlined in Table 2:

Tactic	**Explanation**
Expertise	The apparent purpose of this game is to establish that one has a knowledge of the facts affecting the negotiations, with the intention of obtaining credibility (showing homework has been done).
Snow Job	Similar to expertise in that purported facts and figures are its main toll and its use may be that of tying to establish credibility or to overwhelm the opponent with the facts and figures.
So What?	The parties play this game immediately after a concession has been won at the bargaining table. Regardless of the priority given the item prior to concession, the post-concession posture is that the item wasn't really important in the first place. It serves to de-emphasise the conceded item so that the party granting the concession can maintain leverage for gaining other concessions.
Wheat and Chaff	This game has perhaps the longest life span of nay negotiating game. It is established early and nurtured throughout negotiations. It is played by putting chaff (minute or not really priority items) in order to obtain the wheat (priority items). The idea is to pad away the demands with items that can be given away.
Wooden Leg	The thesis of the game is "what would you expect from a man with a wooden leg?" A party may argue suffering a limitation that makes them irresponsible for action.
Between a Rock and a Hard Place	In this game one party will empathise with another, but still not give in to the other party's demands.

Sandbagger	In this game, one party will attempt to negotiate from a position of strength by establishing his own weaknesses i.e. a party may feign the degree of his wounds or weaknesses in order to exaggerate the relative strength of the opponent, thus preying on the other party's sympathy.
Boredom	The game is played when the opponent is making his most salient and forceful point.
If it weren't for you	This game shields a party from acknowledging their own inadequacies by shifting blame to others.
"Yes But"	One individual appears to be seeking advice from another. In fact, its true purpose is to give negative strokes by discounting all the advice given.

Table 2 Tabulation of Obstructive Tactics

4) *Trap tactics* are used to lead or entice the opponent into making concessions. This is an offshoot of pressure tactics, with the difference that the pressure is self-inflicted, manoeuvring you into a self-created trap (Anstey, 1991). Several of these tactics are discussed in Table 3.

Tactic	Explanation
Simplicity	Simple solutions to complex problems have a direct appeal to everyone. They avoid the effort and uncertainty demanded by involved thought. They can however become critical e.g. rounding off numbers can in some case become self-harming.
Untrue	Being presented with incorrect data (deliberately incorrect or due to ignorance) may trap you into an undesirable position. Be aware of the facts of the case so as to distinguish when this occurs.
Hidden Strings	Beware of hidden expectations that are not made explicit during negotiations. Make sure you probe to elicit all uncovered expectations.
Slicing	This involves making a series of minor concessions, only to discover that over time you have actually made a major concession. The solution to this trap lies in summarising. This allows you to better

	estimate how much ground you have yielded. It also indicates that you are in control and will not be led by the other party.
Off the Record:	This involves offering too much information in informal get-togethers. This technique must be used prudently, being aware of how much information is given, regardless of the informality of your meeting.
Good Guy – Bad Guy	This tactic is used when one party puts you under heavy duress and the other is friendly and conciliatory, leaving you to side with the friendly side.
Final Offer	This is uncertainty about a declared deadlock.
Last minute demand	This involves stating minor matters right at the end, as "by the way" matters, which are really not as minor as they are purported.

Table 3 Tabulation of Trap Tactics

Under this category of tactics, Lewicki et al (1997) suggest the following:

- Bogey: Negotiators using this tactic pretend that an issue of little importance to them is quite important. Later in the negotiation this issue can then be traded for major concessions on issues that are actually important to the negotiator;
- The Nibble: negotiators ask for a proportionally small concession on an item that hasn't been discussed previously in order to close the deal. The conceding item is too small to lose the deal over, but great enough to upset the other party;
- Chicken: A high stakes gamble. Negotiators combine a large bluff with a threatened action to force the other party to chicken out and give the m what they want.

5) *Pressure tactics* are intended to push you into making concessions. They are directed at achieving movement on the part of the other bargaining party (Anstey, 1991). They may include:

- blow hot – blow cold;
- splitting the other's team;
- imposing ultimatums or deadlines;
- threatening to terminate negotiation;

- indications that constituencies are impatient and
- demands of principle.

Other powerful tactics designed to pressure the opponent into making concessions to their disadvantage include:

Tactic	**Explanation**
Exorbitant Demands	Traditional negotiations begin with both parties making large demands that they do not expect to realise. As negotiations proceed they modify their initial demands by making concessions until some agreement is reached somewhere between the extremes of their initial differences. This tactic is used to shake the parties confidence, making them question if there is something unknown about the negotiation. The tactic may simply be a wishful thought on the part of the other side or a bluff. This can be uncovered with skilful questioning.
Threats	This can be done directly or indirectly, tactlessly or with finesses. The aim is still the same: to apply pressure for concession.
Deadlocks	A threat of a deadlock can apply serious pressure on parties.
Surprise	In spite of careful planning, minor surprises are bound to arise. It is important to not to allow these to affect your confidence, but rather turn to questioning mode, buying time to consider the surprise.
Bypass	The other party may bypass you and consult a superior, thus undermining your position and making you feel isolated, if indeed there is no support from your superiors. The best way to tackle this problem is to anticipate such an act and to consult superiors beforehand, thus eliminating this surprise.
Divide and Conquer	Negotiating as a team can be quite risky due to the varying perceptions, opinions and experiences amongst team members. These differences may be small, but they can widen and cause damage to the entire team. It is important to have everyone involved in pre-negotiation planning.

Coalition	When other parties combine against you, pressure increases. It is important to convince the members of such a coalition that there is more common ground between you and them individually, than among the members of a coalition.

Table 4 Tabulation of Pressure Tactics

6) *Tactics to handle pressure*: Whether under pressure from argument or confrontationally based tactics, it is necessary to have skills in dealing with tights situations (Anstey, 1991). These include:

- low reactions to emotive threats
- request the other party for proposals
- use of humour
- problem vs. person focus
- the threat-free apology
- stick to bargaining procedures
- expose the dirty tactic
- respond to needs and emotions
- listen for real vs. overt concerns
- adjourn for a "cool off;
- avoid aggressive responses – keep issues focused.

On the issue of effective tactics, there exists the illusion that physical force is translated to negotiating power. This belief is based on the assumption that, since threats of physical force undoubtedly exert influence, the ability to make such threats is the essence of negotiating power (Fisher, 1990). Another fallacy is that adopting a tough stance initially affords one the choice of relaxing that stance at a later stage. Conventional wisdom insists that it is easier to soften one's position than to harden it. The truth is that the more firmly one is committed at an early stage to carrying out a threat, the more damaging that threat is to one's negotiating power (Fisher, 1990). Pruitt (1990) supports the argument that contentious behaviour has traditionally been assumed to militate against the development of integrative agreements. This is because contentious behaviour ordinarily involves standing firm on a particular proposal that one seeks to foist on the

other party. This means that is an important element of successful problem solving. Contentious behaviour also encourages hostility towards the other party by a principle of psychological consistency. This diminishes ones willingness to contribute to the others welfare and to devise mutually pleasing agreements. Further, it can have the effect of encouraging the other party to feel hostile and to engage in hostile behaviour too. Finally, contentious behaviour signals to the other party a win/lose orientation, thus reducing the integrative potential perceived by the other party. Contentious behaviour may have some benefits. The one benefit that may arise from such behaviour is that it encourages the other party to face controversy when he or she benefits from the status quo. If present circumstances favour the other party, it is often necessary to employ threats to force their attention to ones' concerns, thus encouraging problem-solving behaviour by the other party. Secondly it underlines one 's areas of firmness. Threats and other contentious actions are means of communication. They can be used to emphasise the rigidity of one's high priority interests, making it clear that certain elements of one's position are non-negotiable.

Hirchowitz (1995) proposed that personality variables and situational factors affect the negotiator's choice of tactics. These are detailed in the diagram below.

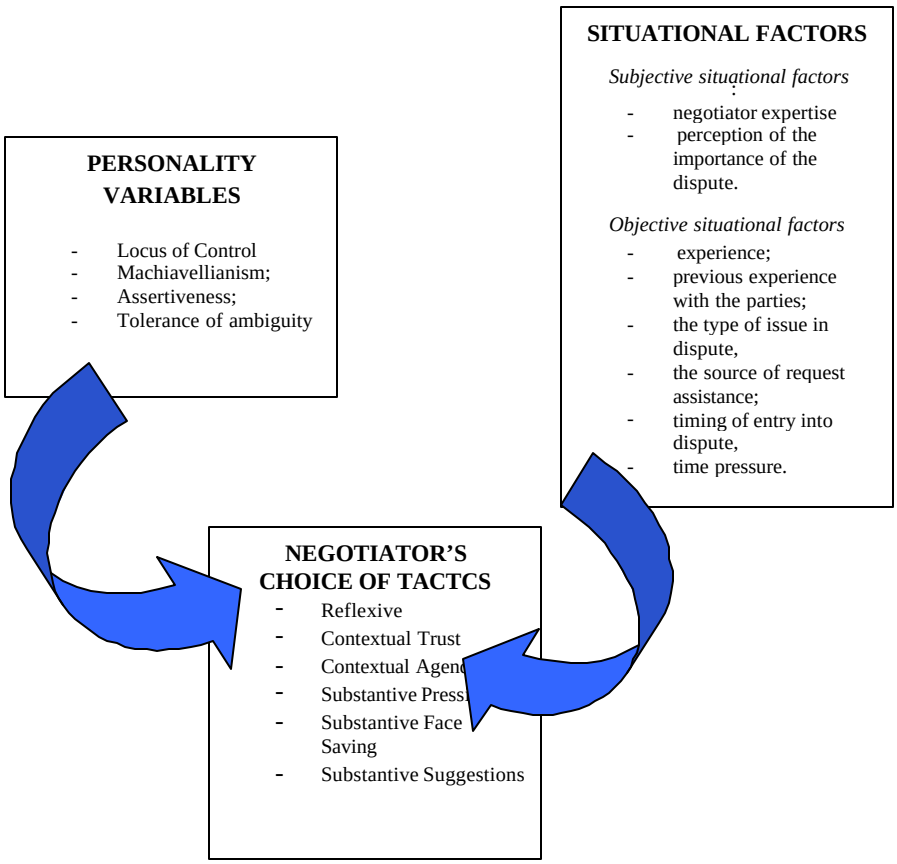


Figure 8 Factors affecting Choice of Negotiating Tactics (Hirchowitz, 1995: 74)

The personality variables include: locus of control; Machiavellianism (extent to which an individual uses manipulative and persuasive strategies to gain control over interpersonal situations), assertiveness, tolerance of ambiguity. Situational factors include subjective factors such as negotiator expertise and perception of the importance of the dispute. Objective situational factors include experience; previous experience with the parties; the type of issue in dispute; the source of request for assistance; timing of entry into the dispute and time pressure. Hirchowitz's model implies that the personality variables together with the situational factors direct the choice of negotiating tactic.

3.7.5 Criticism of the Tactics

Despite the numerous tactics that are available to choose from, the use of tactics has drawn a lot of criticism. Tactics are to many the grist of competitive negotiations. Anstey's (1991) believes

that much of the tactical play recommended by negotiation skills courses is not only overblown but often counterproductive. Bargaining is a game of power exchange: it does involve bluff and the use of mutual pressure by the parties, but there is more to it than this. Tactics have one central purpose- to assist in achieving settlement. Tactics therefore should not be used in an careless ad hoc manner, or in a manner that is not directly related to settlement. They should be used with the intention to apply and to deal with pressure instead of actually applying "dirty tricks".

Lewicki et al (1997) agree that many tactics exist to assist in successful negotiations, but they do not provide a real understanding of the process of negotiating. They also suggest that to deal with these tactics, one can simply ignore them, discuss them, respond in kind or co-opt the other party by befriending them beforehand (making it harder for them to use tactics). There simply are too many tactics and rules of thumb, and they all lack order or system (Mastenbroek, 1990).

Byrnes (1990) also warns negotiators to protect themselves from unethical and abusive negotiators. As some negotiators take pride in various games and tricks they play during negotiations, he comforts the negotiators in the fact that unethical negotiators do not necessarily defeat ethical negotiators in all cases. He advises that if the behaviour is only mildly annoying, such as ingratiation and false praise, try to ignore it completely. Non-response may lead to termination of this tactic. If the tactics cannot be ignored, then bring them up explicitly and discuss them openly with the other side. Finally, if the tactic is highly objectionable and the other party does not stop using it, despite request for the stopping of it, announce that unless the tactic stops, negotiations will end. This advice might need to be reconsidered when dealing with a more powerful other party such as a boss, but otherwise ethical negotiators should not have to tolerate major ethical violations by anyone they negotiate with. A simple rule of thumb to remember when negotiating is that constructive negotiators should avoid destructive tactics, and to negate destructive tactics when they are used by other parties (Scott, 1988).

Hawver (nd) recommends some counter tactics. One basic rule is that not all be used. Some are more effective than others, and some are more appropriate at times when others are not. The fact is that no automatic solution exists for standardised situations. Flexibility must therefore be exercised during negotiations. Further, experts agree that anticipation is without a doubt the

number one tactic that should be developed. Anticipation should be used in pre-negotiation planning and throughout negotiations (anticipating what strategy is being used by the opponent). Time should be taken to consider what tactics the opponent is using and how to counteract them. In situations where agreement and disagreement is uncertain, attention should be diverted. This can be achieved by introducing another topic, postponing issues, or even by introducing humour (Sperber, 1983). Another positive tactic is the recess. Or even move the negotiation to an environment conducive to cordiality and co-operation e.g. golf course (Scott, 1988).

Acuff and Villere (1990) also recommend a number of general strategies that can be used to counteract or avoid game playing. They suggest being aware of such games, especially since they are so subtle in nature. If one feels stuck in a negotiation, the negotiation has probably been directed in a game. Costly negotiating time will be prolonged and key issues may be left out of the final contract if both parties do not pull together. Exaggerations should be stopped, and the facts must be focussed on by resistance to impress or depress the other party. Negative strokes, blaming and attacking the other party with negative usage of language e.g. "that statement doesn't make sense" instead of "can you please explain that better?" should be avoided at all costs. And finally victim/persecutor roles should be avoided. One should not assume a victim role and collect negative strokes nor assume the persecutor role and dish them out. Such a negative spirit should be replaced with co-operation (Acuff and Villere, 1990). There are a number of positive techniques that can be used that are not deliberately harmful, but aim to elicit agreeable responses.

3.7.6 Positive Tactics

Fisher (1990) suggests a number of positive and harmless techniques. He proposes that the ability to exert influence depends upon the combined total of a number of different power-factors. These include:

1. The Power of Skill and Knowledge

A skilled negotiator is better able to influence the decisions of others than is an unskilled negotiator. Strong evidence suggests that negotiating skills can be both learned and taught. One way to become a more powerful negotiator is to become a more skilful one. Some of those skills

are those of dealing with people: the ability to listen, to become aware of the emotions and psychological concerns of others, to empathise, to be sensitive to their feelings and one's own, to speak different languages, to communicate clearly and effectively, to become integrated so that one's words and non-verbal behaviour are congruent and reinforce each other, and so forth. Other skills are those of analysis, logic, quantitative assessment, and the organisation of ideas. The more skill one acquires, the more power one will have as a negotiator. These skills can be acquired at any time, often far in advance of any particular negotiation. Knowledge is also powerful. Knowledge relevant to a particular negotiation in which one is to engage is even more powerful. The more information one can gather about the parties and issues in an upcoming negotiation, the stronger one's entering posture. Knowledge about the people involved, about the interests involved and about the facts can be very useful.

2. *The Power of a Good Relationship*

The better a working relationship that is established in advance, the stronger the negotiating power. Two most critical elements of a working relationship are trust and the ability to communicate easily and effectively. According to Colosi (1990), parties to a negotiation will find it difficult if not impossible to exchange promises or commitments with each other if they do not trust each other. When trust is low or non-existent, parties find it difficult to communicate their expectations. If communication is problematical in a relationship, parties do not listen effectively to each other as each states its expectations, problems, interests, alternative solutions, demands and proposals or counterproposals, and its rationale for any of the above. Ineffective listening due to poor communication creates problems in understanding.

3. *The Power of a Good Alternative to Negotiating*

To a significant extent, negotiating power depends upon how well one can do by walking away. A negotiator is thus often advised to develop and improve his "BATNA"- his Best Alternative to a Negotiated Agreement. One kind of preparation for negotiation that enhances one's negotiating power is to consider the alternatives to reaching agreement with this particular negotiating partner, to select the most promising, and to improve it to the extent possible. This alternative sets a floor. If this practice is followed, every negotiation will lead to a successful outcome in the sense that any result accepted is better than anything else to be done. The less attractive the other

side's BATNA (Best Alternative to a Negotiated Agreement) is to them, the stronger my negotiating position (Johnson, 1993 and Ury, 1991). Also refer to this BATNA, but also recommend that the negotiator have a good idea of what the best imaginable deal is and what the worst acceptable deal is.

4. *The Power of an Elegant Solution*

In any negotiation there is a multitude of shared and conflicting interests. One way to influence the other side in an negotiation is to invent a good solution to that problem. The more complex the problem, the more influential an elegant answer. A wise negotiator includes in his or her preparatory work the generation of many options designed to meet as well as possible the legitimate interests of both sides. Brainstorming enhances negotiating power by enhancing the chance that a solution will be devised that satisfies both parties' interests.

5. *The Power of Legitimacy*

Each of us is subject to being persuaded by becoming convinced that a particular result ought to be accepted because it is fair; because the law requires it; because it is consistent with precedent, industry practice, sound policy considerations or because it is measured against some objective standard. One can substantially enhance his negotiating power by searching for and developing various objective criteria and potential standards for legitimacy, and by shaping proposed solutions so that they are legitimate in the eyes of the other party.

6. *The Power of Commitment*

Two types of commitment prevail in the arena of negotiations: affirmative commitments and negative commitments. Affirmative commitments are ones that dictate what a party is willing to do, and negative ones what a party is unwilling to do. Affirmative commitments bind the party committing it, forcing him into risk. If the party waited, better terms may have resulted for them, but in exchange for that risk, the party has increased his chance of affecting the outcome. A wise negotiator will formulate an offer in ways that maximise the cumulative impact of the different categories of negotiating power. The terms of an affirmative commitment will benefit from all the skill and knowledge that has been developed; the commitment benefits from the relationship and is consistent with it, it takes into account the walk-away alternative each side has; the offer

will constitute a reasonable elegant solution and will be legitimate. With all this power in its favour, there is a chance the agreement will be achieved.

If all this power does not get to a positive outcome, then negative commitment/coercive power may be used. Logic suggests that victory goes to the one who first commits to an appropriate figure. Therefore, an early and rigid negative commitment (e.g. take it or leave it) at the right point should prove persuasive (Fisher, 1990).

Hawver (nd) mentions the following techniques that are not harmful:

1. Controlling the order in which topics are discussed (least controversial first, and more controversial later, or vice versa).
2. Lowering the other parties' expectations before beginning.
3. Letting the other party do most of the talking. Listening carefully, getting clues about its argument and the strength of its case. Keeping a judicious silence at the right moment may lead the other party to make concessions before you even ask for them.
4. Having all the facts and sources of information on hand. Don't weaken the competitive position by fumbling over facts, giving the opponent an advantage.
5. Each time a new argument is made, make the option less attractive than the one already offered. This tempts the opponent to consider the prior offer more seriously.
6. Avoid sudden, unplanned emotional reactions.
7. Consider the psychological needs of the other side. Avoid forcing opponents into corners, just for the sake of doing so. Show patience and respect for the adversary.

Similarly, Ury (1991) suggests five tactics known to assist in breaking through negotiation obstacles. These include:

- *Go to the Balcony*: this involves controlling one's behaviour, suspending reactions, buying time to think, and thinking of both parties' interests and BATNA.
- *Step to their Side*: this involves creating a favourable climate before negotiating such as defusing the opponent's anger, fear and suspicions and doing the opposite to what the

opponent expects i.e. listen, acknowledge his points, and agree wherever possible. The ultimate objective is to disarm the opponent by stepping to his side.

- *Don't reject…Reframe*: This involves changing the game. Instead of rejecting the opponents' position, direct his attention to the problem of meeting each side's interests.
- *Build them a golden Bridge*: This involves involving the opposition in the process, incorporate his ideas, satisfying the opponent's unmet interests, particularly the basic human needs. Help the opposition save face and make the outcome appear as a victory for him.
- *Bring them to their sense, not to their knees*: Point out to the opponent of the cost of agreeing to the contrary if he still resists.

This strategy requires the resistance of normal human temptations and to do the opposite of what one is tempted to do in the heat of the negotiation. This is the equivalent of "reverse psychology".

Friend (1990) recommends further harmless techniques of persuasion. These include:

1. *Be like the listener*: as people respond well to those who resemble them, it is important to establish strong identification with the other person. This resemblance helps establish trust and rapport. The theory is that "I am like you. We are in sync. You can trust me." Laborde (1987) in fact contends that the basis of successful negotiating is establishing rapport. She suggests simple techniques such as matching breathing, voice tones and tempos, body language and movements. By acquiring new skills and focusing on processes rather than content, we can substantially increase our effectiveness in negotiating.
2. *Practice Active Listening*: The techniques of active listening are relatively new. In active listening the listener states his or her impression of what the other person is saying, making the other feel recognised, without displaying agreement or disagreement.
3. *Meet on the home field:* By holding negotiations in their own offices, managers can gain a huge bargaining edge. The reason for this is that boundaries give security, protecting you from unwanted encroachments by others. The home grounds offer not only the advantage of familiar territory, but also advantageous seating arrangements. Of course the home ground advantage can be upset. Some parties relish the chance to overturn the balance of power

when they attend a meeting in another person's office. Johnson (1993) and Hawver (nd) agree with this.

4. *Make a Strong Appearance:* Many people are casual about their appearance on the grounds that others should ignore such superficial signs and place more value on content. Most of us like to think that what a person says holds greater weight than the person's appearance. Experiments prove otherwise. The conclusion is that when persuading someone, appearance counts.
5. *Make a Credible case:* One of the high hurdles to overcome in winning people's view is the problem of scepticism. People continually look for clues to the credibility of information they receive. Several ways to enhance credibility include: using straight talk and avoiding slanted arguments, exaggerations, emotional appeals etc; anticipate objections in advance, raise those objections during the course of conversation to reveal fair-mindedness; being specific, citing evidence to support the case revealing homework has been done on the matter, and stating sources.
6. *Use the Reciprocity Principle:* Skilled negotiators practice asking more than they expect to receive. When their initial requests are turned down, they make a second, more modest request. Because they have now made a concession, the other party feels obligated to accede to the smaller request. The result is that the negotiator ends up with what he or she really wanted in the first place (Friend, 1990).

Finally, Fisher (1990) and Mastenbroek (1990) suggest that certain practices can be followed to enhance negotiating power, such as acquiring knowledge of the other side's interest and perceptions, maintaining good working relations with potential adversaries and developing and improving the best alternative to a negotiated agreement. They even caution against using threats unless as a last resort, and then only to the extent consistent with legitimacy, maintaining a good relationship, and the power of an elegant solution that takes into account the interests of both sides.

3.8 CONCLUSION

More and more situations require negotiation, as conflict permeates the IT industry. With its ever-increasing demands and pressures, individuals have become more involved in decision-making, few of whom are willing to accept decisions dictated by someone else. The wide spectrum of personality types, differing beliefs, standards of behaviour, priorities, as well as differing views on how to achieve certain objectives can all lead to conflict. Conflict is therefore inevitable, and handling these differences requires sound negotiation skills in order to reach mutually beneficial agreements. This chapter attempted to assist in the managing of these differences and in resolving conflicts by providing some guidelines on negotiating strategies and techniques. The negotiation process is simple yet it has the ability to create an environment free of conflict, mistrust and dysfunctional work teams.

The chapter proposes that the outcome of a negotiation should not hinge solely on the negotiators' individual skills. Several techniques and strategies have been identified which can be employed by negotiators to ensure a successful intervention and achieve settlement. Simple activities such as listening, avoiding judgement, disregarding distractions as well as listening for ideas rather than facts, outlining the main ideas, interrupting and probing can go a long way in assisting parties to reach a mutual and beneficial consensus. The subsequent chapter addresses the relevance and importance of these negotiating techniques and strategies, in the systems development arena.

CHAPTER FOUR

THE IMPORTANCE OF A NEGOTIATION STRATEGY IN SYSTEMS DEVELOPMENT

4.1 INTRODUCTION

Systems often fail to be developed to any party's satisfaction, and projects are often terminated in spite of apparent rational justification (Robey and Markus, 1984 and Doll, 1985). Barki and Hartwick (2001) have done extensive research on the matter of system failure and agree that Interpersonal Conflict is a neglected topic in Information System Development (ISD). While deemed important, few ISD studies have examined interpersonal conflict, the management of this conflict, or the impact this conflict has on project outcomes.

Conflict is defined in many different ways. Interdependence, disagreement and interference are a common theme in most definitions. Interdependence exists when each party's attainment of their goals depends, at least in part, on the actions of the other party. Disagreement exists when parties think that a divergence of values, needs, interests, opinions, goals or objectives exists. Interference exists when one or more of the parties interferes with or opposes the other parties' attainment of its interests, objectives or goals. As emotions also tend to emerge when there are major disagreements, or when parties interfere with the attainment of each other's important goals, negative emotions has been incorporated as the fourth property in the definition of conflict. Interpersonal conflict is thus defined as a phenomenon that occurs between interdependent parties as they experience negative emotional reactions to perceived disagreements and interference with the attainment of their goals.

All four properties are present in ISD. Typically project teams involve multiple parties who are interdependent: users depend on the IS Staff or analysts who develop the system, the IS staff depend on the users who evaluate the system developed and both parties depend on top management for providing the necessary resources for the project. Also the parties involved in

ISD have divergent interests, opinions and goals. When these parties disagree and act solely with their own interests in mind, their actions interfere with the interests or goals of other parties. As a result of such actions, emotions such as frustration, hostility, anger and distrust can emerge.

Developing a successful IS therefore requires more than just technical knowledge (Carroll, 1982). So often systems development is viewed simply as a series of steps that must be accomplished. It has been noted that intimate knowledge of the behavioural aspects of systems development is just as crucial as knowledge of the technical aspects. Recent research has considered IS development as a social process, seeking to understand how the characteristics of that process affect its outcomes. Outcomes are not restricted to the technical validity of systems but also include their behavioural and organisational validity (Newman and Robey, 1992). One of the predominant viewpoints of the evaluation of IS's is thus that information systems are not objective/rational objects, but social, subjective and political objects with a technical component (Hirschheim and Smithson, 1988). A discussion of both the rational and the political view follows.

4.1.1 The Rational View of IS

Characterising a process as rational implies two things: that the process has an identifiable and agreed upon set of gaols and, second, that it has been described to achieve that goal. The systems development process is rational to the extent that two primary goals can be identified:

- To produce systems that enhance task performance and organisational effectiveness, and
- To produce systems that are accepted and used appropriately.

The development life cycle and techniques for user involvement are often prescribed to achieve these goals (Robey and Markus, 1984; Saunders, 1981). The life cycle is intended to ensure the translation of systems objectives into operational systems within constraints of schedule and budget. It disciplines practitioners to respect technical prerequisites. Likewise estimates of project costs should be made prior to investing substantial resources in systems analysis and design. In addition to these technical requirements, the life cycle shows concern for human users and their needs. Thus, training is conducted prior to conversion and installation on order to reduce resistance that might accompany abrupt changes in the work environment (Robey and Markus, 1984). The life cycle also delineates the responsibilities of various actors over the entire

process. Systems development entails considerable skill specialisation. Fundamental differences between analysts, programmers, hardware technicians and computer operators necessitate a rather extensive division of responsibilities during the life cycle. By logically defining the steps involved, the life cycle shows where each group of specialists contributes.

From the above discussion it can be seen that IS's impose both technical and social changes upon organisations. Understanding these changes requires an awareness of the value and assumptions built into the system during the design process. This awareness, however, is limited by the common assumption that IS development is a rational process, directed toward the improvement of decision-making and organisational effectiveness. This assumption ignores the possibility that IS design is a political process in which various actors stand to gain or lose power as a result of design decisions. This view will be discussed next.

4.1.2 The Political View of IS

Recently, the political view of organisations has assumed far greater stature in organisation theory not only from the rational standpoint, but also in terms of new and conflicting goals. From the political perspective, elements of the system design process can be interpreted as rituals which enable actors to remain overtly rational while negotiating to achieve private interests.

For a process to be described as political there are two requirements, which may loosely be termed motive and opportunity. Motive refers to the presence of two or more actors, either individuals or groups, having differing objectives and interests. Opportunity refers to a situation in which some actors may achieve their objectives to the absolute or relative disadvantage of the others. The systems development process satisfies both of these requirements because it is almost always entails multiple actors with differing objectives, and brings them together in various ways. While the specific motivations of developers and users vary among individual, organisation and situation, it is clear that developers and users rarely have identical or similar interests. Differences in backgrounds and circumstances may produce different motives during systems design. In many cases of systems development, the picture is further complicated by the presence of multiple users and designers. This plurality of interests threatens one of the key assumptions of rationality, that is, a well-defined and accepted goal. In cases of conflicting

interests, appeals to a super-ordinate goal may be ignored by parties seeking to achieve their own ends. From a political perspective, the SDLC creates the opportunity for parties with diverse interests to exert influence over one another. Technically sound systems completed on schedule and within budget are not always accepted. Frequently these failures are attributed to lack of user involvement throughout the life cycle. Consequently various techniques have been used to involve users in system design. Robey and Markus (1984) thus support and discuss the importance of steering committees, information requirements analysis techniques, prototyping and their behavioural approaches to improve systems development via the improvement of communication between users and developers. At the same time, these system activities can be described as elements of a political process. A political interpretation does not imply that the above techniques are unnecessary or ineffective. Rather, system development activities may well serve purposes beyond the rational goals of system quality and user acceptance.

The primary assumption of the political variant of the interaction theory is that IS's frequently embody a distribution of intra-organisational power as an attribute affected by its design. Intra-organisational power is an attribute of individuals or subgroups, such as departments within the organisation; it can be defined as the ability to get one's way in the face opposition or resistance to those desires (Markus, 1983).

Conflicts and contradictions arise spuriously within the project group itself, due to project uncertainty, unclear project aims, different interests in the group, lack of experience in dealing with difficult organisational problems and so on. There are contradictions between the aims of the project and the available resources, including the competence of the project group, particularly as the aims change. There are contradictions between the project group and the users and between different user groups in relation to the project aims. Different agents within the organisation have different interpretations of events and even conflicting interests, giving rise to different interpretations of events and proposals for change. They engage in complex power struggles and play organisational games that are difficult for an outsider to identify and understand (Hirschheim and Klein, 1989). Often these contradictions are treated as obstacles that disturb the system development process. It is however important for the system developer to take

these contradictions seriously, and treat them as opportunities rather than as grievances (Dahlbom and Mathiassen, 1993; Hirschheim and Klein, 1989; Hayes, 1996).

Development should be regarded as a process of continuously mediating contradictions. Contradictions themselves are not a debilitating factor needing to be suppressed in our world; instead they are the mechanism for facilitating learning, and they are the force that generates system development. To reach a stage of agreement, democracy, harmony, co-operation etc. efforts must first be made to facilitate the mediation process and to respect both parts of a contradiction (Bai and Lindberg, 1998). Negotiating skills have therefore become imperative in IS development.

4.1.3 The Importance of Negotiating in IS Development

A central criticism of mainstream IS development is its reliance on functionalistic and positivistic practice in its development and application. Yet Klein and Lyytinen (1997) argue that the separation of information systems goals from human purpose and the identification of data with measurable facts conceal the real nature of information systems as social communication systems. Hirschheim and Klein (1989) present the neo-humanistic approach to systems development, whereby conflict and contradictions are what are required when developing information systems for the purpose of instigating change. Developers must therefore be aware of the conflicting interests that can influence design choices. They must be able to sell the system to all sides of a political setting, willing to make non-critical design compromises to placate the political environment and be willing to tackle political problems that jeopardise the design of an effective IS (Martin, 1991). In summary, design of business IS's requires co-ordination with all parties to the design effort. The effective systems designer can no longer be merely a technical specialist. System developers must also have the necessary negotiation skills to influence key design players (Martin, 1991).

Paddock (1986) argues that the use of Organisational Development (OD) techniques vastly increase the probability of IS development success. He suggests that system development be divided into technical and social development. Socio-technical development implies a negotiation process. Management Information System (MIS) personnel in conjunction with users

arrive at a set of technical goals and options; organisational development consultants in conjunction with user arrive at a set of social goals and options. The first level of negotiation is therefore between MIS/users and OD/users. The second negotiation level is one of reconciling options to arrive at an acceptable system. As this second level, it is conceivable that in attaining acceptance the user's customary role as co-negotiator with the designer under a traditional model could evolve into one of mediator between MIS and OD professionals in accommodating technical and social goals and options. This role shift may be undesirable from the user's standpoint, causing them undue pressure by calling for more knowledge than they may have, putting them at a disadvantage with both the MIS and OD professionals (Paddock, 1986).

Despite the urgency of negotiation skills in the IT industry, however, Lee et al (1995) believe that the focus still remains fixed on technical skills, technology management knowledge skills, business functional knowledge skills, and interpersonal and management knowledge skills. Todd, McKeen and Gallupe (1995) report similar job skill expectations, with great emphasis on technical skills. Avgerou and Cornford (1993) and Hunter (1993) agree that in most of the methodologies used today, engineering concerns are much more prevalent than the social and organisational ones. The question therefore firmly remains whether system development can be improved by softer skills, and in particular, by negotiation skills. The framework that follows examines this relationship. The framework proposes that the introduction and development of negotiating skills, as well as the implementation of a negotiating process within the generic Systems Development Life Cycle (SDLC) will positively affect information systems delivery.

4.2 THE PROPOSED NEGOTIATION FRAMEWORK FOR IMPROVED SYSTEM DEVELOPMENT

The field of research is remarkably interdisciplinary, including important contributions by psychologists, economists, political scientists, sociologists, and scholars in the fields of community, industrial relations, law and organisational behaviour (Hirchowitz, 1995). In contrast to other studies that have focused on the process of negotiation and its effectiveness, and even others that have focused primarily on the systems development life cycle, the present study focuses on negotiation and its significance in system development improvement. The framework

should be of great value to systems development teams, who by and large subsist with a great deal of unresolved conflict, and even bad decision making that arises from a general incompetence to mediate and negotiate to effective and mutually beneficial solutions.

The framework has primarily been motivated by the need for negotiation skills in the IT industry, which has become even more apparent. Many authors have mentioned the importance of the softer issues of IT. Managing the power, politics and organisational conflict inherent in information systems is increasingly recognised as being of critical importance to successful information systems development (Warne, nd and Chuang and Burns, 1997). This is primarily because project teams involve multiple parties who are interdependent: users depend on the IS Staff or analysts who develop the system, the IS staff depend on the users who evaluate the system developed, and both parties depend on top management for providing the necessary resources. These parties have divergent interests, opinions and goals. When these parties disagree and act solely with their own interests in mind, their actions interfere with the interests or goals of other parties. As a result of such actions, emotions such as frustration, hostility, anger and distrust can emerge (Barki and Hartwick, 2001 and Chuang and Burns, 1997).

Amidst all the conflict and power struggles that arise in systems development as well as the decision making that is required in systems development, it comes as no surprise that communication and negotiating skills will improve an IT project (Robey and Markus, 1984). It is this very notion that has motivated the framework for improved systems delivery, which proposes that at each and every phase of systems development, negotiation skills and techniques can be drawn upon to effectively mediate to a beneficial agreement for all parties, and ultimately lead to an improved systems result.

The framework does not necessarily need to be strictly adhered to, but instead should serve as a guideline on all roles involved in systems development to support and facilitate communications. In effect, it aims to assist those that are weak in communicating their needs effectively. Frequent use of the framework will ultimately make system developers more attuned to making use of their softer skills in their line of work, and which have largely been neglected in the past. The use

of framework should ultimately improve systems delivery, and hopefully reduce the rate of system failures.

Based on the negotiation literature of Fisher and Ury (1991), Fells (2000), Lewicki et al (1997) and the system development literature of Whitten et al (1994), the following framework is presented to improve systems development through the use of negotiation techniques.

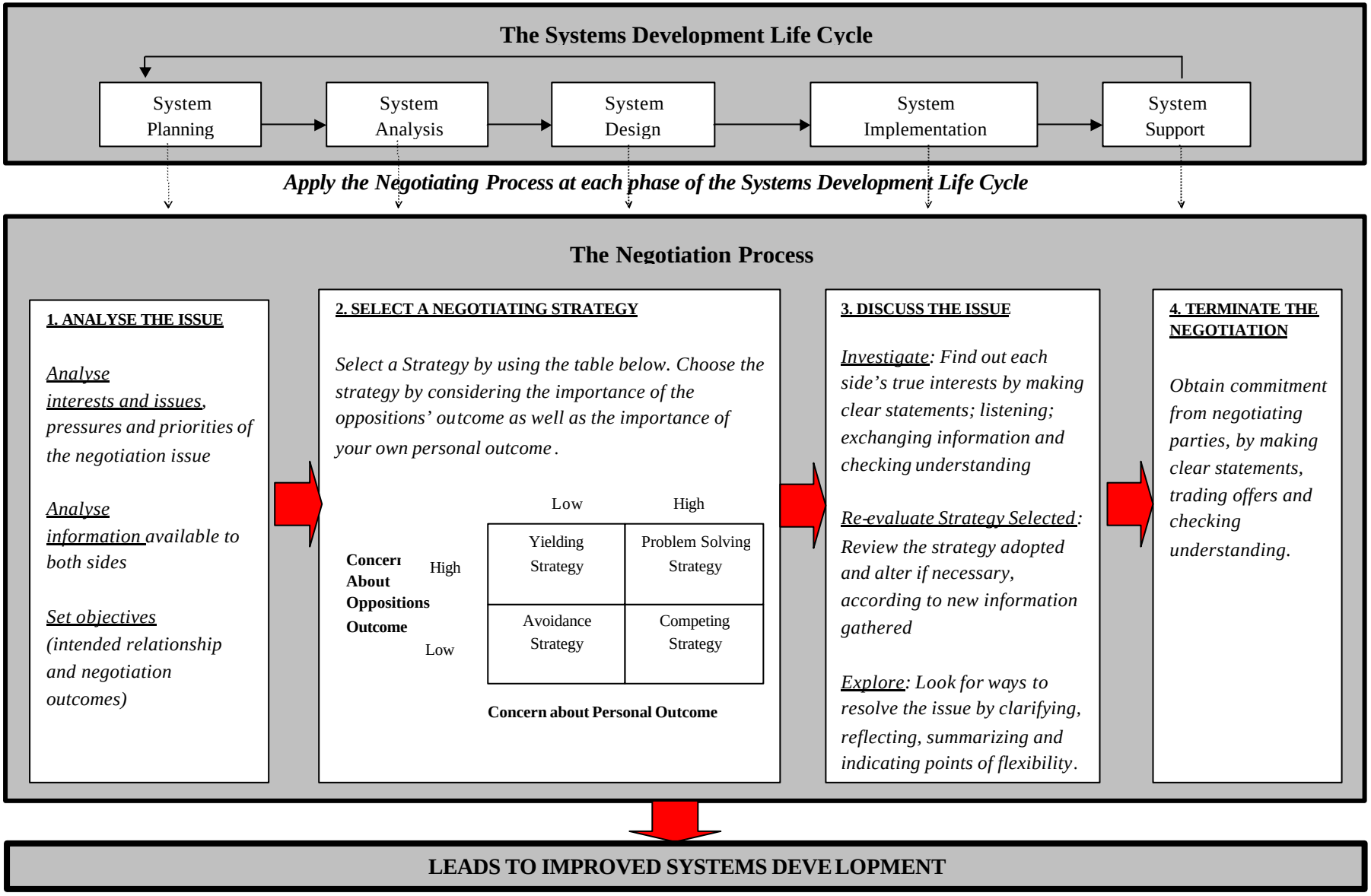


Figure 9 Framework for Improved Systems Delivery

At each phase of the SDLC the negotiation process can be applied to improve the final systems delivery. When selecting the appropriate negotiating strategy, the important dimensions of the negotiation strategy matrix are the degree of concern the actor has for achieving substantive outcomes, and how much concern he has for the relational outcome. The matrix represents the actor's unilateral choice of a strategy in that it is independent of the other party's thoughts and other variables. Depending on how important these two factors are results in a choice of four strategic options: Avoidance, Competition, Accommodation, and Compromise. Each of these strategies has different methodologies and tactics to achieve the desired objectives. To recap, avoidance is an option where there is indifference regarding one's own and the other party's outcomes; competition is an option when there is an overpowering interest in achieving own outcomes with no regard for the effect on the relationship; accommodation may be an option where there is a strong interest in achieving only the relationship outcomes; and compromise becomes an option when both parties' outcomes are important to the negotiation (Lewicki et al, 1997).

These strategic alternatives are situated inside the variables Trust, Principles and Standards, Episodic Assumptions and Goals, for the reason that these are external factors that influence the choice of negotiation strategy. Principles and Standards are further influenced by the driving factors: Environment, Contexts, Outcomes, Processes and Relationships. These driving factors ultimately drive the choice of negotiation strategy.

To recap, these factors are explained by Lewicki et al (1997) as follows:

- *Principle and Standards* are important in the choice of a suitable negotiation strategy as this component of the model involves guidelines for desires and expectations about how the negotiation relationship will be established, conducted, and continued.
- *Negotiation Goals:* Negotiators should specify their goals and objectives clearly.
- *Episodic Assumptions:* Some goals can be attained in the short-term, in a single negotiation session. Other negotiation goals, more complex or more difficult to define, may require initiating a sequence of negotiation episodes.
- *Trust:* Trust is a complex concept in itself. In negotiation, trust is more specifically derived from the past experience with another person, knowledge of that person' actions with other

opponents, and expectations regarding how likely this person is to behave co-operatively in an upcoming interaction.

- *Driving Factors*: How negotiators interpret, act on, or react to these elements generates the principles and standards that ultimately drive their choice of negotiation strategy.

- ***Environments*** are the general settings within which events take place.
- ***Contexts*** are the various situational settings that mark actual negotiation episodes within any given environment
- ***Outcomes*** are the effects of past negotiations on subsequent exchanges.
- ***Processes*** are the vehicles, methodologies, and behaviours by which the negotiation takes place
- ***Relationships*** are the connections and associations among the negotiating parties.

The framework shows that at each stage of the SDLC system development teams should consider these variables with other parties when negotiating. Different relationships may even demand different strategies at each phase of the SDLC, and the system developer should consider these factors. The acceptance of the framework will be tested in the empirical research, rather than the framework per se. Modifications and improvements to the framework will be made with the maturation of the research.

4.3 CONCLUSION

Every company today exists in a complex web of relationships, and the shape of that web is formed, one thread at a time, through negotiations. It is difficult to think of any business initiative that does not require some form of negotiation (Ertel, 1999). Technological advancements as well as greater social, economic and technical interdependence produce new conflicts as they increase the demand for human interaction (Johnson, 1993). Managers will thus need to become even better at reading interactions, and more flexible in adjusting their own styles to the people with whom they interact (Tannen, 1995). The world around us has thus made negotiation an essential requirement. Business managers can and must negotiate (Pienaar and Spoelstra, 1996). This is primarily due to the very high price of conflict that is often paid

afterwards, and which can be avoided by the small the price of peace paid beforehand (Pienaar and Spoelstra, 1996).

Kuechle (1990) affirm that the art of negotiation may be the most important skill possessed by today's successful executives. Each year businesses are confronted with more and more situations where negotiating skills are needed, and these involve executives at all levels of an organisation. In some settings it has become apparent that the lack of negotiating skills is responsible for disputes that threaten the survival of an organisation or even an industry (Kuechle, 1990). Therefore, it is a great relief to know that that negotiators are made, not born, and that there is something about the process that can be taught and learned (Zartman and Berman, 1982). The art of effective negotiation can be learned. It is an art that has application in many settings, from international relations and labour relations to interpersonal relations within an organisation. The need for negotiation skills among executives at all levels is apparent (Kuechle, 1990).

Conflict is difficult to study because many hidden agendas and in most instances a skilled observer has to ferret out and interpret its ramifications. A political perspective on IS is therefore needed. It can immensely add to our understanding both of the implications of IT and the dynamics of effective implementation (Keen, 1981). It is for this reason that the framework for improved systems delivery was developed and will be tested in the empirical research.

These issues, which are of fundamental importance to the effective exploitation of computer technology, urgently require more understanding (Keen, 1981). For this industry to achieve excellence in today's world, the commitment to develop people is becoming increasingly important. It is after all the effective utilisation of the human resources that is the cornerstone to high performing organisations (Hersey, 1984). The following chapter provides a comprehensive review of the tools adopted to conduct the research as well as the tests applied to derive conclusive results for the proposed hypotheses.

CHAPTER FIVE

RESEARCH METHODOLOGY

5.1 INTRODUCTION

The preceding chapters have provided a thorough understanding of the SDLC, Negotiating Practices and the importance of marrying the two in order to boost the System Delivery result. They revealed that it is no longer adequate for the system development teams to be competent only in technology, but also in their interpersonal interactions within and outside the development environment. The failure to do so has been noted to be one of the leading factors contributing to system development failures. The research that follows addresses the importance of interpersonal skills (more specifically, negotiating skills) within system development teams in order to result in superior system solutions.

The research evaluates the inherent negotiating capabilities of individuals involved in system development. It attempts to discover the factors which affect the conflict experienced in the SDLC, which role in the team and which systems development methodology requires negotiating abilities the most, whether negotiating abilities at each phase of systems development have any effect on systems delivery and finally the factors that contribute to both the importance as well as the improvement of negotiation skills in the SDLC.

This chapter will outline the research objectives that were investigated, the main hypotheses that are postulated, the scope and limitations of the study, the method of data collection and finally, the statistics used to support or reject the hypotheses stipulated.

5.2 THE RESEARCH PROBLEM

The research problem is best summed up by the following question:

Do negotiating skills and the implementation of a negotiation process within the generic Systems Development Life Cycle (SDLC) positively affect information systems delivery? The research

problem posed is an important one, in that it casts greater insight into the organisational behavioural techniques such as negotiating to increase the probability of system success.

5.3 THE RESEARCH OBJECTIVES

The objectives of this dissertation are:

- To investigate whether system development is currently experienced as a process of conflict
- To ascertain which roles experience a greater degree of conflict
- To ascertain which SDLC methodologies experience a greater degree of conflict
- To assess whether negotiating skills vary across the different roles within the SDLC
- To assess whether negotiating skills vary across SDLC methodologies
- To determine whether the desire to improve negotiating skills varies within the SDLC
- To evaluate the importance attached to negotiating skills in the SDLC
- To assess whether the acceptance of the proposed framework varies within the SDLC
- To examine what factors play a role in the acceptance of the proposed frameworks
- To assess whether the proposed framework will improve systems delivery

5.4 HYPOTHESES

The literature review prompted five main hypotheses:

MAIN HYPOTHESIS	SUB-HYPOTHESIS
MAIN HYPOTHESIS 1: Conflict varies in the SDLC	**SUB-HYPOTHESIS 1a:** All roles within system development teams experience varying degrees of conflict.
	SUB-HYPOTHESIS 1b: Respondents with several roles experience more conflict than those with only one.
	SUB-HYPOTHESIS 1c: Conflict experienced varies with the methodology adopted.

	SUB-HYPOTHESIS 1d: Teams using more than one methodology experience more conflict than those using only one.
	SUB-HYPOTHESIS 1e: Conflict experienced depends on negotiating skills.
MAIN HYPOTHESIS 2: Negotiation Skills Vary in the SDLC	**SUB-HYPOTHESIS 2a**: All roles within system development teams comprise of individuals with varying negotiating skills.
	SUB-HYPOTHESIS 2b: Developers require most negotiating skills within the team.
	SUB-HYPOTHESIS 2c: Planners and analysts require most negotiating skills outside the team.
	SUB-HYPOTHESIS 2d: Respondents with several roles are most skilled at negotiating.
	SUB-HYPOTHESIS 2e: Respondents who are more technical in nature are less skilled at negotiating.
	SUB-HYPOTHESIS 2f: Negotiating skills vary with the systems development methodology adopted.
MAIN HYPOTHESIS 3: Acceptance of the Proposed Framework will vary	**SUB-HYPOTHESIS 3a:** The acceptance of the proposed framework depends on the individual's ability to negotiate.
	SUB-HYPOTHESIS 3b: The acceptance of the proposed framework depends on the importance the individual attaches to negotiating within the SDLC.
	SUB-HYPOTHESIS 3c: The acceptance of the proposed framework depends on the conflict inherently experienced in the team.
	SUB-HYPOTHESIS 3d: The acceptance of the proposed framework depends on the role of the respondent within the SDLC.
	SUB-HYPOTHESIS 3e: The acceptance of the proposed framework depends on the number of roles the respondent has.

	SUB-HYPOTHESIS 3f: The acceptance of the proposed framework depends on the systems development methodology adopted.
	SUB-HYPOTHESIS 3g: The reasons for accepting the framework will vary across the different roles.
	SUB-HYPOTHESIS 3h: Framework acceptance depends on skills, conflict, improvement and importance.
MAIN HYPOTHESIS 4: Improvement of Negotiating Skills varies in SDLC	**SUB-HYPOTHESIS 4a:** Different roles within System Development Teams seek to improve their negotiation skills.
	SUB-HYPOTHESIS 4b: All methodologies seek to improve negotiation skills equally.
	SUB-HYPOTHESIS 4c: Improvement depends on conflict.
MAIN HYPOTHESIS 5: Importance of Negotiating Skills varies in DLC	**SUB-HYPOTHESIS 5a:** Different roles within System Development Teams deem it important to have negotiating skills. **SUB-HYPOTHESIS 5b:** The importance of negotiating skills varies with methodologies.
	SUB-HYPOTHESIS 5c: Importance depends on Improvement, Conflict and Skills.

Table 5 Tabulation of hypotheses with respective Sub-Hypotheses

5.5 SCOPE OF THE STUDY

5.5.1 The Industry

The reach of the research was limited to organisations in Southern Africa. These organisations were either large software development houses or small IT departments within organisations that specialised in developing either outsourced systems or in-house systems.

5.5.2 The Research Methodology

The research methodology adopted for the purposes of this investigation was purely quantitative in approach. The quantitative approach has been defined as an inquiry into a problem, based on testing a theory composed of variables, measured with numbers and analysed with statistical

procedures, in order to determine whether predictive generalisation of the theory hold true (Saunders, 1988).

Quantitative research has been employed by the academic research community for hundreds of years, and is well understood and enjoys a high degree of acceptance and status (Remenyi and Williams, 1993). The literature on the subject tends to promote the methodology as being objective and quick to conduct. Time constraints limited the researcher from conducting interviews and pursuing a qualitative approach.

5.6 METHOD OF DATA COLLECTION

In the current survey, data was gathered by developing and distributing an electronic self-administered questionnaire. This questionnaire was designed in the form of a VB application, which was e-mailed together with a brief explanation outlining the aim of the research and assuring confidentiality to all respondents.

Self-administered questionnaires are typically low in cost, and they afford more time allocation to the questions, allowing respondents to collect facts, talk with others, and to consider replies at length. The major weakness however is that of non-response (Emory and Cooper, 1991).

The section below further describes the process undertaken in gathering the data.

5.6.1 The Sampling Method

Sampling Methods are usually divided into two types: probability sampling and non-probability sampling (Fink, 1995a). Probability Sampling provides a statistical basis for saying that a sample is representative of the study or target population. This form of sampling also implies the use of random selection. An advantage of probability sampling is that it is possible to obtain an unbiased sample without much technical difficulty. A disadvantage however is that this form of sampling may not always pick up all the elements of interest in a population.

Non-probability sampling however is chosen based on judgement regarding the characteristics of the target population and the needs of the survey. With non-probability sampling, the survey's

findings may not be applicable to the target population at all. This is because some members have a chance of being chosen and others do not, thus leading to selection bias. The strength of these sampling methods however is that they are relatively convenient, economical and appropriate for many surveys. For this reason, non-probability sampling methods were used for the purposes of this research.

Snowball Sampling is the non-probability sampling technique used to conduct the survey. This type of sampling relies on previously identified members of a group to identify other members of the population. As newly identified members select others, the sample snowballs. This technique is often used in circumstances where a sample list is unavailable.

5.6.2 Sample and Population

A sample is any subset of a population. A sample should as much as possible display similarities and common characteristics of the whole population, in the instances when it is not feasible to collect and analyse data of the larger population (Clarke and Cooke, 1983). In this research, the population consisted of system development teams in South Africa. Roughly one thousand questionnaires were mailed out to system development teams in varying industries: from healthcare, engineering, banking, web development, to consultants working on system projects. The questionnaire was forwarded by "word of mouth" to all those involved in the systems development life cycle, from inception to completion.

Of the one thousand questionnaires that were sent out, only one hundred and eighty six questionnaires were returned to from the sample set. Thirty-one of these were unusable, thereby reducing the total sample to one hundred and fifty five. The response rate was thus low. Several reasons for this will be discussed in section 5.8.

5.6.3 Reliability and Validity of the Survey Instrument

The type of measuring instrument used in research should be valid and reliable. These qualities will be discussed in detail.

- **Reliability**

A reliable survey instrument is one that is relatively free from "measurement error". Measurements must be consistent, stable and reproducible (Rosnow and Rosenthall, 1996). In some cases measurement errors arise from a poorly designed survey where the respondent does not have a good understanding of what is required, or where questions are poorly stated or do not measure consistent variables. In designing the survey instrument, careful attention was paid to reducing the impact of measurement errors by ensuring equivalence (the extent to which two items in the measuring instrument yield consistent results) as well as internal consistency (the extent to which all items or questions assess the same skill, characteristic or quality) (Fink (1995a).

- **Validity**

Validity refers to the degree to which a survey instrument assesses what it aims to measure. The greater the validity of a measuring instrument, the greater the confidence that it actually reflects what it is intended to measure. An instrument can be invalid, in the sense that systematic errors influence the data or analysis. The result is that inferences and generalisations made on the basis of the research cannot be trusted (Shaughnessy and Zechmeister, 1990).

Validity tests include tests for internal as well as external validity. Internal validity relates to issues of errors internal to a research design. Internal validity tests are used to identify possible causes of error that may arise in the design or implementation of a study. It determines whether the manipulation of the independent variable actually caused the effects on the dependant variable or if it was caused by extraneous variables (Malhotra, 1993). High internal validity results indicate that there are few errors and that extraneous variables were unlikely to have affected the results. This also instills greater confidence that the research results are dependable.

Common threats to internal validity are: history (concurrent situational events), maturation (concurrent physical, psychological or emotional changes) and invalid instruments (which will not provide valid measurements of a variable of interest) (Cooper and Schindler, 1998). All these threats have been carefully considered when designing the questionnaire. Care was taken to make the questionnaire short, and thought was given to the variables that would be measured and

how they would be measured, thus increasing the chances that the data gathered would be internally valid.

External Validity is the ability to generalise the findings from the experiment to other populations, situations, events and settings. High external validity means that the experiment can be generalised to many situations and populations. Common threats to external validity include selection bias and the Hawthorne effect. Selection bias occurs when a sample is not representative of the population from which it was drawn. This does not instil confidence that the generalisations about the population hold. The Hawthorne effect refers to distortions in behaviour which may occur when respondents know they are being observed (Cooper and Schindler, 1998). Both of these factors were considered when designing the questionnaire. The random sampling method of snowballing reduced selection bias, and respondents were also free to respond at their own will, thus eliminating any form of pressure that may often be created by the Hawthorne effect.

5.6.4 The Design of the Survey Instrument

Effective questionnaire design requires that careful attention be paid to the layout, the length and the content. Rea and Parker (1992) argue that sound questionnaire construction is a highly developed art form within the structure of scientific inquiry. This section gives a basic understanding of how the questionnaire was designed. The coded questionnaire can be found in Appendix A(a) and the questionnaire forwarded to respondents can be found in Appendix A(b).

For purposes of simplicity and logical sequence, the questionnaire was divided into three categories: Personality, Systems Development and Framework. Questions were designed to elicit the respondent's attitudes towards the importance of negotiating in the SDLC. Each screen had a next button and a back button to allow easy navigation between the screens.

5.6.4.1 Section A: Personality

Questions one to fifteen in this section were aimed at determining whether the respondent innately possessed negotiating skills or not. The respondent was asked to rate himself according to a five point Likert scale, ranging from strongly disagree, disagree, neutral, agree and strongly

agree. Based on the literature review, several characteristics of people possessing negotiating capabilities were depicted, and the statements were altered to be positive as well as negative, so as not to lead or prompt the respondent. This is a form of reliability check, so that a respondent cannot fall into a habit of answering positively for all statements. Questions in this section are labeled as Question A1 – Question A15.

5.6.4.2 Section B: Systems Development

Question one of section B aimed at determining what role the respondent played within the SDLC. Questions twelve to twenty six primarily aimed at examining the current environment the respondents were subject to within the SDLC process, and whether they deemed it beneficial in their line of work, to harness their negotiation skills.

Questions twenty-seven to thirty-seven questioned the systems development methodology practised, and whether the methodology has any impact whatsoever on the conflict experienced within the SDLC. The questions also tried to elicit which phases within the SDLC required more negotiation skills than others. Again, some questions within this subset attempted to discern whether the respondents felt the need to have negotiation skills, which would in any way improve their systems delivery result.

Questions in this section were posed in the form of the five point Likert scale (as discussed in 5.6.2.2) where respondents could select the option they most agreed with. In some instances however, respondents were given options to select more than one answer, with the use of check boxes. An example is if the respondent was involved in more than one role of the SDLC, or if more than one phase of the SDLC was relevant to the question. The questions in this section are labelled as Question B1 – Question B67.

5.6.4.3 Section C: Framework

Section C presented the respondent with the Negotiation Framework for Improved Systems Delivery. It was briefly explained, followed by the diagrammatic representation of the Framework. The questions that followed questioned its usefulness in the SDLC. Respondents then had an option to express reasons why they regarded it to be useful or not, depending on their options. The reasons for their choice were again presented in check box format, so that more than

one reason could be selected, if applicable. The questions in this section are labelled as Question C1 – Question C16.

5.6.5 Choices of Measurement

Choices given to respondents for their answers may take several forms: nominal, ordinal and numerical. Nominal data have no natural numerical values and result in counts and frequencies expressed as numbers and percentages. Ordinal measurements fit into a continuum or scale that is ordered from positive to negative. The result is an ordered set of answers which can be scored (Fink, 1995b). In the current survey, nominal measures were mostly used, as well as ordinal measurements, in the form of the five point Likert scale. Section 5.7 explains the measurements in greater detail.

5.6.6 Pilot Testing of the Survey

Once the questionnaire was tested for clarity, comprehensiveness and acceptability, critical factors to test for in the draft questionnaire (Rea and Parker, 1992), it was piloted. Pilot testing means having access to a group of potential respondents that is willing to try out a survey instrument prior to releasing it to the greater sample (Fink, 1995a). A small sample of ten respondents was included in this pilot study. From the pilot run, much feedback was received on the quality of the questionnaire's construction. The questionnaire was revised, taking into account all the suggestions that were recommended in the pilot study. Some suggestions included:

- placing a "back" button on all the screens as respondents wanted to review their answers and they could not navigate backwards
- splitting some double loaded questions, thus eliminating confusion with regards to what variable they were responding to
- simplifying some questions which had double negatives and
- aesthetic changes.

Most suggestions were central to the visual presentation, navigation and usability of the VB application as opposed to the material aspects of the questionnaire, such as content. The

questionnaire was therefore not re-submitted for further testing, but rather adjusted for ease of use prior to the final launch.

5.7 USE OF STATISTICS

Several statistical tests were run on the gathered data, in order to analyse the data. The statistical software packages Statgraphics Plus 5.1, SPSS as well as SAS Enterprise were used to analyse the data. This section will detail the different statistical tests that were used.

5.7.1 Cronbach's Alpha

The internal consistency for five variables was calculated, to determine whether the summated measure could be used in the present analysis. *REFER TO APPENDIX B*

(a) The Standardised Cronbach Alpha for the variable measuring Negotiating Skills was 0.62
(The Negotiating skills variable was measured summing the answers to Questions A3 – A15, B15 and B16)

(b) The Standardised Cronbach Alpha for the variable measuring Conflict was 0.70
(The Conflict variable was measured summing the answers to Questions B9, B10, B12 and B16)

(c) The Standardised Cronbach Alpha for the variable measuring Acceptance of the Proposed Framework was 0.80
(The Acceptance of the Proposed Framework was measured summing the answers to Questions B22, B24, B26, B62, C1 and C2)

(d) The Standardised Cronbach Alpha for the variable measuring the Improvement of Negotiating Skills was 0.67
(The Improvement of Negotiating Skills was measured summing the answers to Questions B17, B19, B20 and B21 and B25)

(e) The Standardised Cronbach Alpha for the Importance Attached to Negotiating was 0.35

(The Importance Attached to Negotiating was measured summing the answers to Questions B6 and B26)

Most alpha values exceeded 0.6, indicating that the internal consistency was sufficient for a summated measure of the variables Skills, Conflict, Improvement and Framework Acceptance. The alpha for the variable of Importance attached to Negotiating however was only 0.35, indicating a poor internal reliability of the data collected for these two questions. A possible explanation for the low Cronbach Alpha could be due to the fact that question B6 addresses the importance attached to negotiating in a more direct manner than does question B26. Further, the wording in question B26 may have confused some of the respondents. For this reason, the internal reliability of these two questions resulted in a poor score. The most fitting question of the two, namely B6 was therefore used to measure the variable.

5.7.2 Descriptive Statistics

Descriptive statistics is defined as those methods involving the collection, presentation and characterisation of a set of data in order to properly describe the various features of that set of data (Berenson and Levine, 1983). The calculation of the mean, the standard deviation, indices and other measures provide a summary at a glance (Curwin and Slater, 2002).

5.7.2.1 Frequencies

A frequency distribution counts the number of observations that fall into each of a series of intervals, called classes that cover the complete range of observations. Although a frequency distribution provides information about how the numbers are distributed, the information is more easily understood by a visual representation, such as a graph. Such a graph is the histogram, which can be plotted to represent the frequencies of the observations within each class. A histogram is plotted by mapping the variable of interest on the horizontal axis, while the vertical axis represents the count, proportion or percentage of observations per class (Keller and Warrack, 2003).

Frequency distributions were used for Sub-hypotheses 1a-1e, 2a, 2b, 2d – 2f, 3d –3g, 4a, 4b, 5a and 5b.

5.7.2.2 Cross-Tabulations

To graphically describe the relationship between two nominal variables, we are only permitted to determine the frequency of the values. In this case, a cross-tabulation is called for, also known as a contingency table, which lists the frequency of each combination of the values of two variables class (Keller and Warrack, 2003).

Sub-hypotheses 2b, 2c and 3g were cross-tabulated.

5.7.2.3 Chi-Squared Statistic

The Chi-Squared Statistic is the most widely used non-parametric hypothesis test. A chi-squared test will allow us to find if there is a statistical association between the two sets of answers, and this together with other information may allow the development of a proposition that there is a causal link between the two (Curwin and Slater, 2002). One of the basic conditions for the chi-squared test is that all of the expected frequencies must be above five. Chi-Squared tests were conducted on sub-hypotheses 2b, 2c, and 3g.

Although the chi-squared test can be used to see if two nominally scaled variables are statistically independent of one another, it fails to indicate the strength of the relationship between the variables. Cramer's V however indicates the degree of association between the variables. Cramer's V is a measure of association based on chi-square for tables of any dimension. The value ranges between zero and one, with zero indicating no association between the row and column variables and values close to one indicating a high degree of association between the variables. Cramer's V tests were conducted on sub-hypotheses 2b, 2c, and 3g.

5.7.2.4 Pearson's Product-Moment Correlation Coefficient

The Pearson's Product-Moment Correlation Coefficient is used to test for a linear relationship between two variables (Keller and Warrack, 2003). The Coefficient indicates how strongly the variables are associated, and the direction of the relationship (positive or negative). A positive correlation indicates a direct relationship whereas a negative correlation indicates an inverse relationship. The strength of the association is indicated by the size of the coefficient. The closer the relationship is to 1 or –1, the stronger the relationship. It is important to note that correlation is not in any way equivalent to causation.

The Pearson's Product-Moment Correlation Coefficient test was applied to sub-hypotheses 2b, 2c, and 3g.

5.7.3 Hypothesis Testing

A significance level is used to indicate the maximum risk one is willing to take in rejecting the null hypothesis when it is in actual fact true. The significance level is typically set at 10 percent or 5 percent. In this study, a 5 percent significance level was used as it implies that there is a 5 % chance of being wrong. It thus provides a more prudent and reliable statistical evaluation of whether hypotheses are accepted or not. In contrast, a 10 percent significance level allows for a greater chance of being wrong with the results of the hypothesis.

5.7.4 Parametric Procedures

Hypothesis tests using parametric procedures are concerned with specific statistics (parameters), which represent statements about the population. These are then tested by using further statistics derived from the sample. Parametric tests require the following conditions to be fulfilled:

1. A null hypothesis can be stated in terms of parameters
2. A level of measurement has been achieved that gives validity to the differences.
3. The test statistic follows a known distribution (Curwin and Slater, 2002).

5.7.4.1 Analysis of Variance (ANOVA) Test

ANOVA tests allow the comparison of two (One-Way ANOVA) or more (Multifactor ANOVA) populations of interval data. The technique determines whether differences exist between population means. The procedure works by analysing the sample variance. Three assumptions that must be fulfilled in ANOVA tests are: normality, homogeneity of variance and independence of error.

- **Normality**

The F Test of the ANOVA test requires that the random variable be normally distributed. Normality is easily checked graphically by producing histograms for each variable. The kurtosis and skewness of the different categories can also be measured to test for normality. The data follows a Normal distribution only if the standardised skewness and/or kurtosis is within the

range of -2 to +2 for all categories. If the values are out of this range, the data does not follow a normal distribution and non-parametric tests must be used to conduct hypothesis tests.

- **Homogeneity of Variances**

The F-test on the ANOVA table tests whether there are any significant differences between the means. In instances where the P-value of the F-test is greater or equal to 0.05, there is not a statistically significant difference between the means of the variables at the 95.0% confidence level. This indicates that the data is homogeneous.

Variance Tests such as the Cochrans' C, Bartlett's and Levene's tests are also popular indicators to test variances about the mean. When the smallest of these three P-values is greater than or equal to 0.05, there is not a statistically significant difference amongst the standard deviations at the 95.0% confidence level. This indicates that the data is homogeneous.

- **Independence of Error**

The ANOVA test requires Independence of Error i.e. it requires that the error ("residual" difference between an observed and predicted value of Y) should be independent for each value of X. This is usually more relevant to data that is collected over time, (Keller and Warrack, 2003). In the present study, after an F-ratio was found to be significant, the multiple comparison test was implemented to determine which specific means differed significantly from each other. Common multiple comparison techniques include the Least Significance test and the Bonferroni Test (Berenson and Levine, 1979)

Sub-hypotheses 1b, 1e, 2d and 2e were tested with a One-Way ANOVA while Sub-hypotheses 1a, 1c, 2a, 2f, 4a, 4b and 5a were tested with a Multifactor ANOVA.

5.7.4.2 Simple and Multiple Linear Regression

Regression Analysis is used to predict the value of one variable on the basis of another variable or even, other variables, in the case of Multiple Linear Regression. The technique involves developing a mathematical equation that describes the relationship between the variable to forecast (the dependent variable) and the variable(s) that are believed to be related to the dependent variable (the independent variables). A correlation test is executed to determine if

whether a relationship exists. Again, a relationship (indicated by R^2 does not necessarily infer causation (Keller and Warrack, 2003).

The regression equation with three independent variables (X_1, X_2 and X_3) can be modelled as follows:

$$\mathbf{Y = b_0 + b_1X_1 + b_2X_2 + b_3X_3 + \mathit{E}}$$

where:

Y = the dependent variable

b_0 = the Y-intercept

b_1 = the slope of Y with variable X_1, holding X_2 and X_3 constant variable

b_2 X_2 = the slope of Y with variable X_2, holding X_1 and X_3 constant variable

b_3 = the slope of Y with variable X_3, holding X_1 and X_2 constant variable

E = the random error in Y (Page and Meyer, 2000)

Keller and Warrack (2003) maintain that there are three assumptions that need to be fulfilled in regressions:

1. Normality
2. Homoscedasticity i.e. when the variation around the line of regression is constant for all values of X over the entire range of time periods, it is said to have homoscedasticity.
3. Independence of Error – data that is collected over time, requires that the error ("residual" difference between an observed and predicted value of Y) should be independent for each value of X.

In the present study, the following plots were examined to ensure that the multiple linear regression assumptions were upheld:

residuals against the predicted values, Y and
residuals against each predictor variable, X

The Durban- Watson statistic was also calculated to ensure that the residuals were not auto-correlated.

Sub-hypotheses 1d, 3a, 3b, 3c and 4c were tested with a Simple Linear Regression while Sub-hypotheses 3h and 5c were tested with a Multiple Linear Regression.

5.7.4.3 Nonparametric Procedures

Statistical techniques that deal with ordinal data, follow nonparametric procedures, which attempt to determine whether population locations rather than population means differ. Nonparametric procedures are also favoured in instances where populations are not normally distributed (Keller and Warrack, 2003). For this reason, non-parametric tests can also be applied to interval data, in cases of non-normality of the data.

5.7.4.4 Kruskal-Wallis

The Kruskal-Wallis test is applied to problems with the following characteristics:

1. The problem objective is to compare two or more populations
2. The data are either ordinal or interval but non-normal and
3. The samples are independent.

When data are interval or normal, the ANOVA F Test was used to determine whether differences exist. In the case of non-normal data, the data is treated as though it were ordinal and simply apply the Kruskal-Wallis test (Keller and Warrack, 2003). The Kruskal-Wallis test was applied to sub-hypotheses 3d, 3e, 3f.

The table that follows tabulates the statistical tests used for each sub-hypothesis as well as the questions that were drawn from the questionnaire to test the sub-hypotheses. The table further indicates the relevant appendix, which can be referred to for the statistical reports.

SUB-HYPOTHESIS	STATISTICS TEST	QUESTION USED	APPENDIX
SUB-HYPOTHESIS 1a	Multifactor ANOVA	Conflict Variable and Questions B1 – B5	D
SUB-HYPOTHESIS 1b	One-Way ANOVA	Conflict Variable and	E

		Multi-Role Factor	
SUB-HYPOTHESIS 1c	Multi-Factor ANOVA	Dependant Variable: Conflict Questions B31 – B37	F
SUB-HYPOTHESIS 1d	One-Way ANOVA	Conflict Variable and Multi-Methods Factor	G
SUB-HYPOTHESIS 1e	Simple Regression	Dependant Variable: Conflict Independent Variable: Skills	H
SUB-HYPOTHESIS 2a	Multifactor ANOVA	Skills Variable and Questions B1 – B5	I
SUB-HYPOTHESIS 2b	Cross-Tabulation Tables; Chi-Squared Tests; Cramer's V	Questions B1 –B5 against Question B46	J
SUB-HYPOTHESIS 2c	Cross-Tabulation Tables; Chi-Squared Tests; Cramer's V	Questions B1 –B5 against Questions B50 and B51	K
SUB-HYPOTHESIS 2d	One-Way ANOVA	Skills Variable and Multi-Role Factor	L
SUB-HYPOTHESIS 2e	One-Way ANOVA	Questions B1 – B5 and B27	M
SUB-HYPOTHESIS 2f	Multifactor ANOVA	Skills Variable and B31-B37	N
SUB-HYPOTHESIS 3a	Simple Regression	Dependent variable: FwkAcceptance Independent Variable: Skills	O

SUB-HYPOTHESIS 3b	Simple Regression	Dependent variable : FwkAcceptance Independent Variable: Importance	P
SUB-HYPOTHESIS 3c	Simple Regression	Dependent variable: FwkAcceptance Independent Variable: Conflict	Q
SUB-HYPOTHESIS 3d	Kruskall-Wallis Test	Questions B1- B5 and FwkAcceptance	R
SUB-HYPOTHESIS 3e	Kruskall-Wallis Test	Questions B1- B5 and FwkAcceptance	S
SUB-HYPOTHESIS 3f	Kruskall-Wallis Test	Questions B31- B37 and FwkAcceptance	T
SUB-HYPOTHESIS 3g	Cross-Tabulation Tables; Chi-Squared Tests; Cramer's V	Questions B1 – B5 against Questions C4 – C10	U
SUB-HYPOTHESIS 3h	Multiple Linear Regression	Dependant Variable: FwkAcceptance Independent Variables: Conflict; Skills; Improvement and Importance	V
SUB-HYPOTHESIS 4a	Multifactor ANOVA	Improvement Variable And Questions B1 – B5	W
SUB-HYPOTHESIS 4b	Multifactor ANOVA	Improvement Variable And Questions B31 – B37	X

SUB-HYPOTHESIS 4c	Simple Regression	Dependent Variable: Improvement Independent: Conflict	Y
SUB-HYPOTHESIS 5a	Kruskal-Wallis	Importance Variable and Questions B1 – B5	Z
SUB-HYPOTHESIS 5b	Multifactor ANOVA	Importance Variable And Questions B31 – B37	AA
SUB-HYPOTHESIS 5c	Multiple Linear Regression	Dependent Variable: Importance Independent: Improvement; Conflict and Skills	AB

Table 6 Table of Statistical Tests used to test Sub-Hypotheses

5.8 LIMITATIONS OF THE RESEARCH

- The most notable limitation experienced throughout the study was that of a security issue. Most respondents could not receive the electronic questionnaire due to firewall constraints, which are in place to secure organisations from electronic viruses. This limited the reach of the questionnaire considerably, as many questionnaires sent out were not received at all.

- The questionnaire was sent out in the form of an executable. There is often great risk in opening e-mail attachments of this format, as executables sometimes contain viruses. For this reason, many respondents who did receive the questionnaire declined to answer it. Some respondents however agreed to answer the questionnaire having been reassured by the McAffee Virus Protection message alert stating the attachment was virus-free. The sample was nonetheless somewhat affected by the threat of a virus.

- The questionnaire's "Submit" button was coded using a MAPI (Microsoft Messaging Application Programming Interface) standard, which is a set of functions that mail-

enabled and mail-aware applications use to create, manipulate, transfer and store mail messages (MSDN Library, October 2001). The responses were mailed back to the researcher using this standard. This however limited the responses, as only users who had Microsoft Outlook would be able to successfully send their answers back to the researcher by email. Respondents who used mail applications such as Lotus for example, would be able to complete the questionnaire, but not be able to send the data through via e-mail.

- The questionnaire was developed in a VB application, with a windows look and feel. It was developed such that the respondents could not escape the application, nor could they avoid answering any question. This was done for the sole purpose of minimising non-response, which introduces error or bias (Fink, 1995a). This may present a limitation in the case of some respondents who may have arbitrarily inserted any values to the questions, for the sole purpose of escaping and closing down the application. Unfortunately the only way to escape and close the application is by clicking the send button, which automatically sent the questionnaire results to the researcher. The questionnaire may have, for this reason, received hurried answers and not ones that truly reflect the opinions of the respondent.

- Although measures were taken to assure respondents of confidentiality, anonymity was certainly an amenity that could not be assured, as the respondents' emails were sent directly to the researcher by name. This may have hindered the rate of response.

- As the questionnaire was passed along from person to person, in a sampling technique known as snowballing, the questionnaire did not reach an even spread of the different roles involved in the systems development team. Another downfall of the snowballing effect is that little control exists over the sample selection.

- The questionnaire was entirely quantitative in approach and did not allow for qualitative discussion, although feedback was offered on several occasions in support and sometimes in disagreement with the suggested framework.

- The data that was collected was largely categorical or nominal (data was received in 1's and 0's). This type of data is limited to very unrefined statistical devices, such as frequencies and bar graphs (Leedy, 1980). Measures had to be taken to transform the data into interval data. Data from the Likert scales was manipulated such that each answer had a weighting.

- The questions directed at the respondents were quite personal in nature, and there is a possibility that respondents answered in a favourable manner, and not in an objective manner.

5.9 CONCLUSION

The research methodology adopted for the purposes of this investigation was purely quantitative in approach. The reach of the research was limited to organisations in Southern Africa. These organisations were either large software development houses, or small IT departments within organisations, which specialised in developing either outsourced systems or in-house systems.
The sample population was reached by means of questionnaires. The objectives of the research gave rise to five main hypotheses, those being:

- Main Hypothesis 1: The Conflict Experienced Varies in the SDLC
- Main Hypothesis 2: Negotiation Skills Vary in the SDLC
- Main Hypothesis 3: Acceptance of the Proposed Framework will vary
- Main Hypothesis 4: Improvement of Negotiating Skills Varies in the SDLC
- Main Hypothesis 5: Importance of Negotiating Skills Varies in the SDLC

The empirical research that follows attempts to prove or disprove the above hypotheses. In order to do so, the statistical tests that will be used include:

- Cronbach Alpha
- Descriptive Statistics in the form of frequencies, tabulations, chi-squared and Pearson product-moment correlation coefficient,
- Hypothesis testing using parametric procedures such as ANOVA and regressions and
- Hypothesis testing using nonparametric tests such as the Kruskal Wallis test.

The subsequent chapter will present and discuss the findings of the empirical research which was conducted using the statistical methods described above.

CHAPTER SIX

DATA ANALYSIS AND FINDINGS

6.1 INTRODUCTION

Data gathered from the respondents was decoded and processed through a variety of statistical tests described in the previous chapter, to prove or disprove the postulated hypotheses. This chapter presents the findings of the empirical research that was undertaken to ascertain the contributing effect that negotiating skills have on the system development result.

The research findings will subsequently be compared against the literature review presented, so as to establish any consistent or conflicting results. In cases where little has been documented about the findings in the tests, the researcher has tried as much as possible to contribute from four years of personal experience in the SDLC, in order to rationalise the findings. As the framework presented to the respondents is not based on any prior studies or tests, the findings will contribute vastly to the existing body of literature.

6.2 STATISTICAL RESULTS

The statistical tests used to analyse the data were all executed using the statistical software packages Statgraphics Plus 5.1, SPSS as well as SAS Enterprise. The purpose of the first few tests, the results of which are detailed in section 6.2.2, was merely to determine which variables were more aptly tested with parametric tests and which with nonparametric tests.

6.2.2 Normality, Homogeneity and Independence of Error

Normality, homogeneity and independence of error are assumptions that need to be adhered to in order to apply parametric tests to the gathered data. The normality assumption requires that the distributions of each group of respondents are normally distributed; homogeneity requires that the variances within each group should be equal for all groups, and the assumption of

independence of error requires that the error (the variation around its own mean) should be independent for each value. The results of these tests follow.

REFER TO APPENDIX C

6.2.2.1 Normality

Each variable was split into different categories (roles, as well as methodologies) and the variables across the categories were tested for normality using a multiple sample comparison test. This test compares the data in different categories. The results of this test indicate whether the variables follow a normal distribution, and thus whether parametric or non-parametric tests should be used to test the hypotheses.

For the purposes of this dissertation, the kurtosis and skewness around the means of the different categories were measured to test for normality. The data follows a Normal distribution only if the standardised skewness and/or kurtosis is within the range of -2 to +2 for all categories. If the values are out of this range, non-parametric tests must be used to conduct hypothesis tests.

The Normality Tests revealed the following:

APPENDIX	VARIABLE	RESULT	NORMA-LITY TEST
1a	Conflict across Roles B1 – B5	The standardised skewness and/or kurtosis is within the range of -2 to +2 for all 5 columns. This indicates normality in the data.	PASS
2a	Improvement across Roles B1 – B5	The standardised skewness and/or kurtosis is within the range of -2 to +2 for all 5 columns. This indicates normality in the data.	PASS
3a	Importance across Roles B1- B5	The standardised skewness and/or kurtosis is outside the range of -2 to +2 for 5 columns. This indicates significant non-normality in the data, which violates the assumption that the data come from normal distributions.	FAIL
4a	Fwk Acceptance across Roles B1-B5	The standardised skewness and/or kurtosis is outside the range of -2 to +2 for 5 columns. This indicates significant non-normality in the data, which violates the assumption that the data come from normal distributions.	FAIL
5a	Skills across Roles	The standardised skewness and/or kurtosis is within the range of -2 to +2 for all 7 columns. This indicates normality in the data.	PASS
6a	Fwk Acceptance across Methodologies	The standardised skewness and/or kurtosis is within the range of -2 to +2 for all 7 columns. This indicates normality in the data.	PASS

7a	Conflict across Methodologies	The standardised skewness and/or kurtosis is within the range of -2 to +2 for all 7 columns. This indicates normality in the data.	PASS
8a	Skills across Methodologies	The standardized skewness and/or kurtosis is outside the range of -2 to +2 for 1 columns. This indicates significant non-normality in the data, which violates the assumption that the data come from normal distributions.	FAIL
9a	Importance across Methodologies	The standardized skewness and/or kurtosis is outside the range of -2 to +2 for 4 columns. This indicates some significant non-normality in the data, which violates the assumption that the data come from normal distributions.	FAIL
10a	Improvement across Methodologies	The standardised skewness and/or kurtosis is within the range of -2 to +2 for all 7 columns. This indicates normality in the data.	PASS

Table 7 Results of Normality Tests

From the analysis above it can be concluded that all variables across all categories follow normal distributions about the mean, except for:

3a: Importance across Roles B1- B5

4a: Fwk Acceptance across Roles B1-B5

7a: Skills across Methodologies and

8a: Importance across Methodologies

For this reason, in hypotheses tests where these variables will be needed, non-parametric tests, such as the Kruskall-Wallis test will be used to accept or reject the hypotheses. Where the assumption of normality has not been violated parametric tests such as ANOVA will be used to accept or reject the hypotheses.

6.2.2.2 Homogeneity

The variables were tested for homogeneity across two different categories: roles and methodologies. The F-test in the ANOVA table tests whether there are any significant differences amongst the means. In instances where the P-value of the F-test is greater or equal to 0.05, there is not a statistically significant difference between the means of the variables at the 95.0% confidence level. This indicates that the data is homogeneous.

Variance Tests such as the Cochrans' C, Bartlett's and Levene's tests were also used to test variances about the mean. When the smallest of these three P-values is greater than or equal to

0.05, there is not a statistically significant difference amongst the standard deviations at the 95.0% confidence level. This indicates that the data is homogeneous. Note that in some instances, because of outliers, it was necessary to transform the data by obtaining the LOG value of the variable and comparing the means of the LOGGED variables.

The Homogeneity Tests revealed the following:

APPENDIX		RESULTS	HOMO-GENEITY TEST
1b	Conflict across Roles B1 – B5	F-ratio = 0.377308 P-value = 0.8249 P-value of the F-test >= 0.05 There is not a statistically significant difference between the means of the 5 variables at the 95.0% confidence level. Cochran's C test: 0.222055 P-Value = 0.926347 Bartlett's test: 1.00381 P-Value = 0.742105 Levene's test: 0.389176 P-Value = 0.816434 P-values >= 0.05 There is not a statistically significant difference amongst the standard deviations at the 95.0% confidence level.	PASS
2b	Improvement across Roles B1- B5	F-ratio = 2.55064 P-value = 0.0384 P-value of the F-test <= 0.05 There is a statistically significant difference between the means of the 5 variables at the 95.0% confidence level. Cochran's C test: 0.216185 P-Value = 1.0 Bartlett's test: 1.00381 P-Value = 0.742006 Levene's test: 0.224908 P-Value = 0.924477 P-values >= 0.05 There is not a statistically significant difference amongst the standard deviations at the 95.0% confidence level.	FAIL

3b	Importance across Roles B1- B5	F-ratio = 1.16381 P -value = 0.3259 P-value of the F-test >= 0.05 There is not a statistically significant difference between the means of the 5 variables at the 95.0% confidence level. Cochran's C test: 0.227088 P-Value = 0.69271 Bartlett's test: 1.00506 P-Value = 0.624731 Levene's test: 0.0572268 P-Value = 0.993909 P-values >= 0.05 There is not a statistically significant difference amongst the standard deviations at the 95.0% confidence level.	PASS
4b	Fwk Acceptance across Roles	F-ratio = 0.611302 P-value = 0.6547 P-value of the F-test >= 0.05 There is not a statistically significant difference between the means of the 5 variables at the 95.0% confidence level. Cochran's C test: 0.212645 P-Value = 1.0 Bartlett's test: 1.00107 P-Value = 0.968133 Levene's test: 0.175409 P-Value = 0.951019 P-values >= 0.05 There is not a statistically significant difference amongst the standard deviations at the 95.0% confidence level.	PASS
5b	Skills across Roles	The F-ratio = 0.613049 P-value >= to 0.05 P -value of the F-test >= 0.05 There is not a statistically significant difference between the means of the 5 variables at the 95.0% confidence level. Cochran's C test: 0.223745 P-Value = 0.842665 Bartlett's test: 1.00344 P-Value = 0.77657 Levene's test: 0.236494 P-Value = 0.917733 P-values >= 0.05 There is not a statistically significant difference amongst the standard deviations at the 95.0% confidence level.	PASS

6b	Fwk Acceptance across Methodologies	F-ratio = 0.58801 P-value = 0.7399 P-value of the F-test >= 0.05 There is not a statistically significant difference between the means of the 7 variables at the 95.0% confidence level. Cochran's C test: 0.208091 P-Value = 0.105582 Bartlett's test: 1.02055 P-Value = 0.419178 Levene's test: 1.13032 P-Value = 0.344329 P-values >= 0.05 There is not a statistically significant difference amongst the standard deviations at the 95.0% confidence level.	PASS
7b	Conflict across Methodologies	F-ratio = 0.273882 P-value = 0.9490 P-value of the F-test 0.05 There is not a statistically significant difference between the means of the 7 variables at the 95.0% confidence level. Cochran's C test: 0.164558 P-Value = 1.0 Bartlett's test: 1.00178 P-Value = 0.997491 Levene's test: 0.144795 P-Value = 0.989971 P-values >= 0.05 There is not a statistically significant difference amongst the standard deviations at the 95.0% confidence level.	PASS
8b	Skills across Methodologies	F-ratio = 1.30914 P-value = 0.2525 P-value of the F-test >= 0.05 There is not a statistically significant difference between the means of the 7 variables at the 95.0% confidence level. Cochran's C test: 0.180836 P-Value = 0.638823 Bartlett's test: 1.00664 P-Value = 0.923066 Levene's test: 0.187784 P-Value = 0.980121 P-values >= 0.05 There is not a statistically significant difference amongst the standard deviations at the 95.0% confidence level.	PASS

9b	Importance across Methodo-logies	F-ratio = 0.817845 P-value = 0.5567 P-value of the F-test >= 0.05 There is not a statistically significant difference between the means of the 7 variables at the 95.0% confidence level. Cochran's C test: 0.531421 P-Value = 0.0 Bartlett's test: 1.02878 P-Value = 0.208875 Levene's test: 1.10939 P-Value = 0.356531 P-values >= 0.05 There is not a statistically significant difference amongst the standard deviations at the 95.0% confidence level.	PASS
10b	Improvement across Methodo-logies	F-ratio = 1.25388 P-value = 0.2785 P-value of the F-test >= 0.05 There is not a statistically significant difference between the means of the 7 variables at the 95.0% confidence level. Cochran's C test: 0.628434 P-Value = 0.0 Bartlett's test: 1.03517 P-Value = 0.114181 Levene's test: 2.34794 P-Value = 0.0311142 The smallest of the P-values < 0.05 There is a statistically significant difference amongst the standard deviations at the 95.0% confidence level. This violates one of the important assumptions underlying the analysis of variance and will invalidate most of the standard statistical tests.	PASS

Table 8 Results of Homogeneity Tests

The table above reveals that the variables across the categories of roles as well as methodologies have data that is homogenous. All F Tests pass except for 2b: Improvement across Roles B1- B5 where the P-value of the F-test yields a value of less than 0.05. This indicates that there is a statistically significant difference between the means of the different roles at the 95.0% confidence level. Extreme outliers may very well cause this difference. For this reason, the Cochran's C, the Bartlett, the Levene's tests and the Kruskall-Wallis tests were conducted which measure standard deviation variations.

6.2.2.3 Independence of Error

Each variable was split into different categories (roles, as well as methodologies) and the variables across the categories were tested for independence of error, using a multiple sample comparison test. The independence of error tests shows the mean for each column of data. It

also shows the standard error of each mean, which is a measure of its sampling variability. The standard error is formed by dividing the pooled standard deviation by the square root of the number of observations at each level. The table also displays an interval around each mean. The intervals in this research are based on Fisher's least significant difference (LSD) procedure. They are constructed in such a way that if two means are the same, their intervals will overlap 95.0% of the time.

In the Multiple Range Tests, these intervals are used to determine which means are significantly different from which others. The Multiple Range Test applies a multiple comparison procedure to determine which means are significantly different from which others. A column of X's identifies homogenous groups. Within each column, the levels containing X's form a group of means within which there are no statistically significant differences. The method currently being used to discriminate among the means is Fisher's least significant difference (LSD) procedure. With this method, there is a 5.0% risk of calling each pair of means significantly different when the actual difference equals 0.

APPENDIX	VARIABLE	RESULT	INDEPENDENCE OF ERROR TEST
1c	Conflict across Roles B1 – B5	There are no statistically significant differences between any pair of means at the 95.0% confidence level. .	PASS
2c	Improvement across Roles B1 – B5	An asterisk has been placed next to 3 pairs, indicating that these pairs show statistically significant differences at the 95.0% confidence level.	FAIL
4c	Fwk Acceptance across Roles B1-B5	There are no statistically significant differences between any pair of means at the 95.0% confidence level.	PASS
5c	Skills across Roles	There are no statistically significant differences between any pair of means at the 95.0% confidence level.	PASS
6c	Fwk Acceptance across Methodologies	There are no statistically significant differences between any pair of means at the 95.0% confidence level.	PASS

9c	Importance across Methodologies	There are no statistically significant differences between any pair of means at the 95.0% confidence level.	PASS =
10c	Improvement across Methodo-logies	An asterisk has been placed next to 1 pair, indicating that this pair shows a statistically significant difference at the 95.0% confidence level.	FAIL

Table 9 Results of Independence of Error Tests

6.3 HYPOTHESIS TESTING

6.3.1 MAIN HYPOTHESIS 1: THE CONFLICT EXPERIENCED VARIES IN THE SDLC

SUB-HYPOTHESIS 1a: All roles within system development teams experience varying degrees of conflict. *REFER TO APPENDIX D*

The frequencies detailing the responses can be tabulated as follows:

		Question B9 Meetings get quite heated up and end up in big arguments		**Question B10** The issues in meetings don't get resolved in one meeting		**Question B12** Interactions with the client run with conflict		**Question B14** Interactions with the team run with conflict		**Avg**
	Count	Average out of 5	%	Average out of 5	%	Average out of 5	%	Average out of 5	%	
Planning	114	2.46491	49 %	3.17544	64 %	2.83333	57 %	2.81579	56 %	57%
Analysis	109	2.50459	50 %	3.25688	65 %	2.84404	57 %	2.87156	57 %	57%
Design	105	2.38095	47 %	3.13333	63%	2.84762	57 %	2.85714	57 %	56%
Implementation	110	2.37273	47 %	3.19091	64 %	2.79091	56 %	2.82727	56 %	56%
Support	86	2.22093	44 %	3.23256	65 %	2.73256	55%	2.81395	56 %	55%

Table 10 Frequencies showing Conflict across Roles

The results above indicate that all roles are generally neutral in the case of meetings getting quite heated up and ending up in big arguments, addressed by Question B9. Despite this neutral stance, it can be seen that of all the roles, planners and analysts feel their meetings get more heated and argumentative than the other roles do. All roles tend to feel relatively equally strong about the fact that issues don't seem to get resolved in one meeting, asked by Question B10. Responses to

Questions B12 and B14 revealed that all roles are all relatively neutral about interactions running smoothly, with minimal conflict, with clients and within the team. Between the four questions, the matter of issues not getting resolved in one meeting seems to be more of a concern for the respondents. A possible reason for this could be that discussions are not being run effectively. On average, across all the questions, planners and analysts experienced slightly more conflict than those involved in design and implementation phases, and support roles experienced the least amount of conflict.

An ANOVA test was conducted to test the variability of conflict across the different roles. The ANOVA table decomposed the variability of Conflict into contributions due to the various roles within the SDLC. The contribution of each factor was measured after removing the effects of all other factors. The P-values tested the statistical significance of each of the factors. Since no P-values were less than 0.05, none of the factors have a statistically significant effect on Conflict at the 95.0% confidence level. Simply put, this means that none of the roles attached significance to the existence of conflict in their work experience.

Despite this finding, the scores tabulated above show that analysts and planners experience a slightly greater degree of conflict with clients and within the team, as well as in meetings in general. The literature suggests that conflicts and contradictions arise spuriously within the project group itself, due to project uncertainty, unclear project aims, different interests in the group, lack of experience in dealing with difficult organisational problems and so on. There are contradictions between the aims of the project and the available resources, including the competence of the project group, particularly as the aims undergo changes. There are contradictions between the between different system roles in relation to the project aims (Dahlbom and Mathiassen, 1993). Schach (1990), Dahlbom and Mathiassen (1993) and Walsham (1993) further suggest that planners and analysts need to be more strongly equipped with negotiating skills than the other roles.

SUB-HYPOTHESIS 1b: Respondents with several roles experience more conflict than those with only one.

REFER TO APPENDIX E

		Question B9 Meetings get quite heated up and end up in big arguments		**Question B10** The issues in meetings don't get resolved in one meeting		**Question B12** Interactions with the client run with conflict		**Question B14** Interactions with the team run with conflict		Avg
	Count	Average out of 5	%	Average out of 5	%	Average out of 5	%	Average out of 5	%	%
One Role	25	2.48	50 %	3.28	66 %	3.08	62 %	2.96	59 %	59%
Many Roles	130	2.4	48 %	3.2	64 %	2.73077	54 %	2.83846	57 %	56%
Total	155									

Table 11 Frequencies showing Conflict across Single and Multi-Role respondents

The ANOVA test reveals that at a 95% confidence level, there are no significant differences among the means of each role, since the P-value of the F-test >= 0.05. This means that regardless of the number of roles a team member has, there is no significant difference in the level of conflict experienced. In essence, the conflict experienced is independent of the number of roles a team member has.

Despite this, the descriptive statistics tabulated above indicate that 84 % of all the respondents were involved in more than one role in the SDLC, whereas the remaining 16 % were involved in only one role. It appears that both types of respondents were in agreement with the degree to which they supported the statements addressing conflict. Albeit not a very strong degree of support, there is an indication that respondents having only one role experience slightly more conflict when interacting with clients, than those who are involved in more than one role. In general, the average across all the questions shows that, respondents having only one role experience slightly more conflict, than those who are involved in more than one role. This could possibly be due to the fact that those involved in more than one role, are more informed of the system development project overall, as a result of their involvement in more than one area. The lack of information or general knowledge of the systems project overall on the part of those who have only one role may result in misunderstandings, miscommunication, incorrect setting of

expectations and even conflict when interacting with the client. Whitten et al (1994) support this finding by expressing that greater participation in the SDLC leads to increased interaction between participants, increased conflict resolution as a result of pressures such as timeous system delivery and lower costs by fitting requirements correctly specified.

SUB-HYPOTHESIS 1c: Conflict experienced varies according to the methodology adopted.

REFER TO APPENDIX F

		Question B9 Meetings get quite heated up and end up in big arguments		**Question B10** The issues in meetings don't get resolved in one meeting		**Question B12** Interactions with the client run with conflict		**Question B14** Interactions with the team run with conflict		Avg
	Count	Average out of 5	%	Average out of 5	%	Average out of 5	%	Average out of 5	%	%
Prototyping	55	2.4	48 %	3.2	64 %	2.85455	57 %	2.8	56 %	56%
RAD	55	2.47273	50 %	3.01818	60 %	3.0	60 %	2.83535	57 %	57%
Structured	93	2.4085	48 %	3.23555	65 %	2.78495	56 %	2.7957	56 %	56%
Unstructured	35	2.5	50 %	3.28571	66 %	2.88571	58 %	0.69243	14 %	47%
JAD	79	2.41772	48 %	3.17722	64 %	2.73418	55 %	2.75949	55 %	56%

Table 12 Frequencies showing Conflict across Methodologies

An ANOVA test was conducted to test the variability of conflict across the different methodologies. The ANOVA table, which decomposes the variability of Conflict into contributions due to the various Methodologies, reports P-values all less than 0.05, indicating that none of the factors have a statistically significant effect on Conflict at the 95.0% confidence level. This means that regardless of the methodology practiced, there is no significant difference in the level of conflict that is experienced. In essence, the conflict experienced is independent of the methodology practiced.

The tabulations above confirm that respondents of varying types of methodologies are equally neutral about the existence of confrontational meetings and that interactions with clients run with conflict. The respondents of varying methodologies feel slightly stronger however, that the issues don't get resolved in one meeting, but still there is a degree of agreement amongst the methodologies with regards to this statement. It is interesting to note that again, there is

neutrality about the statement of interactions running smoothly within the team, but those involved in Unstructured Systems Development Methodologies, feel very weakly about the presence of conflict within the team. In general, across all questions the average shows that little conflict is experienced in Unstructured Methodologies. Perhaps, this is because unstructured enhance open communication. This is supported by Martin (1991) who supports less structured methodologies. He maintains that structured methodologies are weak in that it is difficult for users to know what they need before they had hands-on use of some version of the IS, and narrative descriptions of an IS do not adequately communicate the reality and dynamics of an IS to users. These problems inevitably create conflict amongst the users and the development team.

Similarly, Whitten et al (1994) favour the JAD methodology. This methodology scored the least in the question of interactions with clients running without conflict. Whitten et al (1994) maintain that the increased participation of the JAD approach, improves relationship improvements between participants, improves the gathering of client requirements and ultimately relieves the team of unnecessary conflict handling.

SUB-HYPOTHESIS 1d: Teams using more than one methodology experience more conflict than those using only one.

REFER TO APPENDIX G

		Question B9 Meetings get quite heated up and end up in big arguments		**Question B10** The issues in meetings don't get resolved in one meeting		**Question B12** Interactions with the client run with conflict		**Question B14** Interactions with the team run with conflict		Avg
	Count	Average out of 5	%	Average out of 5	%	Average out of 5	%	Average out of 5	%	%
One Methodology	60	2.45	49 %	3.36667	67 %	2.71667	54 %	2.98333	60 %	58%
Many Methodologies	95	2.38947	48 %	3.11579	62 %	2.83158	57 %	2.77895	56 %	56%
Totals	155									

Table 13 Frequencies showing Conflict across One vs. Many Methodologies

There is a view that the above different methodologies are complementary. Another is that system analysts may not know a number of approaches very well, and in complex situations, a

single methodology is more appropriate. Yet another view is that every situation is different and the analyst should have the opportunity to explore and create a unique method for each situation. Complex problem situations may consist of two or more of the problems situations listed above, requiring a contingency approach to IS development (Avison and Taylor, 1997). The literature therefore supports the idea that conflict across combinations of methodologies or even singular methodologies may vary.

The statistical tests however, reveal distinct neutrality about the statements. The ANOVA table's F-ratio for instance, in this case equals 0.750542, Since the P-value of the F-test is greater than or equal to 0.05, there is not a statistically significant difference between the mean from one level of Multi Methods to another at the 95.0% confidence level. This means that there is not a significant relationship between the conflict experienced and that of the number of methodologies used. This is supported by the tabulated statistics also show that 39 % of the respondents follow only one systems development methodology, and the remaining 61% use a combination of methodologies. Again, there is no distinct variance between the responses. All respondents adopted a neutral stance when questioned about meetings being confrontational, issues not being resolved in one meeting, and interactions both with the client and within the team running without conflict. The percentages simply reveal that there is a slightly stronger degree of agreement about issues not getting resolved in one meeting.

In general, across all the questions, the average percentages also indicate that those using only one methodology experience more conflict. This may be attributed to the team being constrained to adhere to one rigid methodology. Further, it is noticeable, albeit a slight difference, that respondents following one methodology experience slightly greater conflict within the team than those who adopt a combination of systems development methodologies. Again, a possible reason for this could be that those adhering rigidly to only one methodology, might encounter some inflexibility of the methodology, which may hinder the manner in which the system is developed, creating frustrations within the team, and possibly conflict.

SUB-HYPOTHESIS 1e: Conflict experienced depends on negotiating skills.

REFER TO APPENDIX H

The output shows the results of fitting a linear model to describe the relationship between Conflict and Skills. The equation of the fitted model is

Conflict = 17.1067 - 0.0943808*Skills

Since the P-value in the ANOVA table is less than 0.05, there is a statistically significant relationship between Conflict and Skills at the 95% confidence level. The R-Squared statistic indicates that the model as fitted explains 3.85091% of the variability in Conflict. The correlation coefficient equals -0.196237, indicating a relatively weak relationship between the variables. The Durbin-Watson (DW) statistic tests the residuals to determine if there is any significant correlation based on the order in which they occur in your data file. Since the P-value is greater than 0.05, there is no indication of serial autocorrelation in the residuals.

These results were expected. It makes sense that greater conflict will be experienced amongst respondents who have weaker negotiating capabilities. Similarly, those with stronger negotiating capabilities experience a lower degree of conflict in their role. Although there is weak support, the negative relationship between the dependant variable (conflict) and the dependant variable (skills) supports this statement. The literature supports these findings. Fisher and Ury (1991) explain that as disagreements and conflict arise, the need for negotiation skills becomes all the more important. Dana (1990) reaffirms this by explaining that the greater the differences, the heavier the burden on our ability to manage them. The less effectively we mange differences, the more conflict we experience in the relationship. Negotiation skills have the power to transform conflict into co-operation, mistrust into trust, and dysfunctional work teams into efficient partnerships. It harnesses natural, constructive forces lying dormant within workplace relationships, which can heal wounds caused by anger, insult and hurt (Dana, 1990). This effectively describes the relationship between conflict and negotiating skills.

Summary of Main Hypothesis 1

MAIN HYPOTHESIS 1: **THE CONFLICT EXPERIENCED VARIES IN THE SDLC**	**RESULTS**
SUB-HYPOTHESIS 1a: All roles within system development teams experience varying degrees of conflict	REJECT
SUB-HYPOTHESIS 1b: Respondents with several roles experience more conflict than those with only one	REJECT
SUB-HYPOTHESIS 1c: Conflict experienced varies according to the methodology adopted	REJECT
SUB-HYPOTHESIS 1d: Teams using more than one methodology experience more conflict than those using only one	REJECT
SUB-HYPOTHESIS 1e: Conflict experienced depends on negotiating skills	ACCEPT
RESULT OF MAIN HYPOTHESIS 1	**REJECT**

Table 14 Summary of Results of Main Hypothesis 1

6.3.2 MAIN HYPOTHESIS 2: NEGOTIATION SKILLS VARY IN THE SDLC

SUB-HYPOTHESIS 2a: All roles within system development teams comprise of individuals with varying negotiating skills.

REFER TO APPENDIX I

The frequency table tabulates the qualities of a good negotiator against the different roles in the SDLC. Some questions were re-coded, such that they all point in the same direction i.e. possessing negotiating skills. As can be seen, respondents all ranked themselves very highly on these factors. The factors that were most highly ranked, however, are the abilities to communicate openly, to be creative and flexible. Planners scored slightly higher than the other roles, as indicated by the average percentage over all the questions.

Szymanski et al. (1991) distinctly describes the different roles as requiring different skills. Where systems design, systems implementation and systems support roles are mostly involved

with the technology-related components of the information systems, system planning and analysis roles are more involved with communicating, problem solving and justifying decisions, and would thus require substantial negotiating capabilities.

The ANOVA table supports this finding, by decomposing the variability of Skills into the different roles in the SDLC. The P-values tested the statistical significance of each of the roles. Only the P-value of the planning role is less than 0.05, indicating that this role has a statistically significant effect on Skills at the 95.0% confidence level. This is expected, as planners are mostly in the forefront of gathering, assessing, and negotiating on the manner in which to approach the design of the system as well as communicating and negotiating with the designers who build the system. They must therefore either innately possess these negotiating skills, or have developed them with experience. Fisher (1990) further presents evidence that negotiating skills can be both learned and taught. This may explain the high scores in negotiating skills across all the roles.

SUB-HYPOTHESIS 2b: Developers require most negotiating skills within the team.

REFER TO APPENDIX J

All roles were cross-tabulated against question B46, which addressed the requirement of negotiating skills within the team. A summated cross-tabulation is presented below:

The Design Phase requires more negotiating amongst the team members					
	Total	**Yes**		**No**	
		Count	**%**	**Count**	**%**
Planning	114	90	79	24	21
Analysis	109	83	76	26	24
Design	105	84	80	21	16
Implementation	110	88	80	22	12
Support	86	68	79	18	32

Table 15 Frequencies showing relevance of Developer's Negotiating Skills within the team

The frequencies reveal that all roles were in agreement with the statement that the design phase requires most negotiating skills amongst the team members. The strength of agreement was also relatively strong. The frequency table however does not provide a comparative analysis and understanding of which role in fact requires more negotiating skills amongst the team members. For this reason, a chi-squared test was used to determine if indeed the design phase ranked more highly in this question than any other role.

The Pearson's Chi-Squared test indicates that there is agreement across all the roles that a positive relationship exists between the design phase and the need to negotiate within the team, across all the roles. The Cramer's V test however revealed weak associations between the factors. The differing results are clarified by Curwin and Slater (2002) who explain that although the chi-squared test can be used to see if two nominally scaled variables are statistically independent of one another, it fails to indicate the strength of the relationship between the variables. Cramer's V however indicates the degree of association between the variables.

The literature supports these findings. Research has shown that one factor contributing to failed systems is that of poor quality of teamwork between developers, analysts, programmers and other IS professionals (Alter, 1992 and Barki and Hartwick, 2001). System designers in particular have often been criticised for their technical approach to systems development and their lack of participation in the social components their job necessitates (Hirschheim and Klein, 1989). As system design involves the development of an information system according to specifications provided by systems analysts, a great deal of communication is required between these two parties. Conflict arises between these parties when requirements start to change and different approaches to system design need to be adopted. Conflict may also arise between developers as they negotiate the best manner in which to approach the system design. It is for this reason that Walsham (1993) insists that the design and development of information systems should not be considered a straightforward task, as many developers assume, but as a social, subjective and political process with a technical component (Keen, 1981; Robey and Markus; 1984; Hirschheim and Smithson, 1988).

SUB-HYPOTHESIS 2c: Planners and analysts require most negotiating skills outside the team.

REFER TO APPENDIX K

Planners require most negotiating skills outside the team					
	Total	**Yes**		**No**	
		Count	**%**	**Count**	**%**
Planning	114	71	62	43	38
Analysis	109	71	65	38	35
Design	105	67	64	38	36
Implementation	110	71	65	39	35
Support	86	51	59	35	41
Average			63		37

Table 16 Frequencies showing relevance of Planners' Negotiating Skills outside the team

Analysts require most negotiating skills outside the team					
	Total	**Yes**		**No**	
		Count	**%**	**Count**	**%**
Planning	114	60	53	54	47
Analysis	109	54	50	55	50
Design	105	55	52	50	48
Implementation	110	57	52	53	48
Support	86	37	43	49	57
Average			50		50

Table 17 Frequencies showing relevance of Analysts' Negotiating Skills outside the team

The tabulations above reveal that there is strong agreement among most roles that planners require most negotiating skills outside the team. There was weaker support for the statement from the support roles however. All roles except or the support role, adopted a somewhat neutral stance about analysts requiring the most negotiating skills outside the team. Despite this neutrality, the scores reflected by slightly more agreement with the statement than disagreement.

The Pearson's Chi-Squared test indicates that there is a positive relationship between the analysis role and the factor of negotiating outside the team, across all the roles. It also indicates a positive

relationship between the planning role and the factor of negotiating outside the team, across all roles. Cramer's V Test indicates a weak association, but a relationship exists nonetheless. Again, the differing results of these tests are clarified by Curwin and Slater (2002) who explain that although the chi-squared test can be used to see if two nominally scaled variables are statistically independent of one another, it fails to indicate the strength of the relationship between the variables. Cramer's V however indicates the degree of association between the variables.

The results conform with the literature studies. analysts and planners are constantly interacting with clients, defining problems, gathering requirements, and justifying and negotiating on what can or cannot be delivered Szymanski et al (1991).

SUB-HYPOTHESIS 2d: Respondents with several roles are most skilled at negotiating

REFER TO APPENDIX L

The frequency table again revealed that regardless of the number of roles respondents were involved in, they generally still had a high level of negotiating skills. The ANOVA's F-ratio of 0.820461 supports this. Since the P-value (0.3665) of the F-test is greater than or equal to 0.05, there is not a statistically significant difference between the mean Skills from one level of Multi Roles to another at the 95.0% confidence level. This means that respondents who were involved in one role or more than one role did not significantly affect their negotiating skills.

The averages across all the personality traits, revealed a slightly greater strength in the negotiating skills of those involved in one role compared to those involved in many roles. Again, no literature can be drawn upon to explain this finding. The findings of sub-hypothesis 1b however, which reported that respondents with several roles experience more conflict than those with only one, may assist in explaining the finding. Whitten et al (1994) suggest that greater participation in the SDLC leads to increased interaction between participants, and increased conflict resolution; those involved in more than one role experience greater conflict. It can only be speculated that such respondents do not have the necessary negotiating skills to cope with such conflict, whereas those involved in one role are afforded the opportunity to specialise and

strengthen their communication skills in that one role, thus being slightly more competent at dealing with conflict.

SUB-HYPOTHESIS 2e: Respondents who are more technical in nature are less skilled at negotiating.

REFER TO APPENDIX M

	Average	%
Planning _ Technical	3.45161	69
Analysis_ Technical	3.46789	69
Design_ Technical	3.60952	72
Implement _ Technical	3.62727	73
Support_ Technical	3.62791	73

Table 18 Frequencies showing Negotiating Skills of technical respondents

Table 18 reads that all roles agree that respondents who are more technical in nature are less skilled at negotiating. This finding is confirmed with the ANOVA's F-ratio, which equals 0.807214. The P-value (0.5209) of the F-test is greater than or equal to 0.05. So there is no statistically significant difference between the means of the 5 variables at the 95.0% confidence level. This means that there is no significant difference in perceptions of all the roles that those involved in more technical roles exhibit weaker negotiating skills.

The literature supports the findings of the hypothesis test. Davenport (1994) criticises this technical approach as overshadowing a human-centered view of IS development, which fails to encompass all of a company's information, and ultimately undercuts business change. Walsham (1993) further criticises the technicians for having lost the objective of business change in the details of modelling. They are called upon because of their technical competence, but they have to be equally skilled at handling organisational change. They must negotiate and create commitments with other involved actors. It is interesting to note from the tabulations that the roles more technical in nature such as design, support and implementation feel stronger about this statement than the other less technical roles.

SUB-HYPOTHESIS 2f: Negotiating skills vary according to the systems development methodology adopted.

REFER TO APPENDIX N

The frequency table once again reveals that negotiating skills are strong amongst the respondents, regardless of the methodology that is adopted. On Average RAD, Prototyping and JAD methodologies ranked the highest on skills, but neither of these have a substantial effect on skills. An ANOVA test, confirms that only one methodology has a P-value of less than 0.05, indicating that this methodology (Unstructured Methodology) has a statistically significant effect on Skills at the 95.0% confidence level.

This result is reasonable as it can be explained by the fact that unstructured methodologies encourage open communication. Whyte et al (1997) and Kaye (1990) note that system failure arises due to a lack of information and clarity (or presence of ambiguity) among other causes. Inside knowledge of the different viewpoints of the different stakeholder groupings needs to be acquired by genuine participation to succeed in system delivery (Hirschheim and Klein, 1989), which is not attainable through the use of rigid methodologies that hamper communication and information sharing (Martin, 1991).

Summary of Main Hypothesis 2

MAIN HYPOTHESIS 2: **NEGOTIATION SKILLS VARY IN THE SDLC**	**RESULTS**
SUB-HYPOTHESIS 2a: All roles within system development teams comprise of individuals with varying negotiating skills.	ACCEPT
SUB-HYPOTHESIS 2b: Developers require most negotiating skills within the team.	ACCEPT
SUB-HYPOTHESIS 2c: Planners and analysts require most negotiating skills outside the team.	ACCEPT
SUB-HYPOTHESIS 2d: Respondents with several roles are most skilled at negotiating	REJECT
SUB-HYPOTHESIS 2e: Respondents who are more technical in nature are	ACCEPT

less skilled at negotiating.	
SUB-HYPOTHESIS 2f: Negotiating skills vary according to the systems development methodology adopted.	ACCEPT
RESULT OF MAIN HYPOTHESIS 2	**ACCEPT**

Table 19 Summary of Results of Main Hypothesis 2

6.3.3 MAIN HYPOTHESIS 3: ACCEPTANCE OF THE PROPOSED FRAMEWORK WILL VARY

SUB-HYPOTHESIS 3a: The acceptance of the proposed framework depends on the individual's ability to negotiate.

REFER TO APPENDIX O

The output shows the results of fitting a linear model to describe the relationship between FwkAcceptance and Skills.

The equation of the fitted model is

FwkAcceptance = 25.7146 - 0.0784392*Skills

Since the P-value in the ANOVA table is greater or equal to 0.10, the relationship is not statistically significant at the 90% confidence level.

The R-Squared statistic indicates that the model as fitted explains 1% of the variability in FwkAcceptance. The correlation coefficient of -0.106629, indicates a relatively weak relationship between the variables. The Durbin-Watson (DW) statistic tests the residuals to determine if there is any significant correlation based on the order in which they occur in your data file. Since the P-value is less than 0.05, there is an indication of possible serial correlation.

The results indicate that there is no relationship between the dependant variable, Framework Acceptance and the independent variable, Skills. Improvement in Negotiating Skills cannot predict Framework Acceptance. As the proposed framework is one that breaks into new ground,

there is no existing literature to confirm or reject the above findings. The results were unexpected, as some form of relationship between negotiating skills and the acceptance of the framework was anticipated, be it positive or negative. The results of this sub-hypothesis therefore raised some scepticism about the results of sub-hypothesis 2a, where all respondents ranked themselves highly on possessing negotiating skills. Some doubt arose as to whether the respondents were impartial in their evaluation of their skills. For this reason, a causal relationship between negotiating skills and framework acceptance was very difficult to observe. A larger sample population might have indicated otherwise, in which case there would be an opportunity to explore this further.

SUB-HYPOTHESIS 3b: The acceptance of the proposed framework depends on the importance the individual attaches to negotiating within the SDLC.

REFER TO APPENDIX P

The output shows the results of fitting a linear model to describe the relationship between FwkAcceptance and Importance. The equation of the fitted model is

FwkAcceptance = 14.7735 + 1.47517*Importance

Since the P-value in the ANOVA table is less than 0.01, there is a statistically significant relationship between FwkAcceptance and Importance at the 99% confidence level. The positive relationship between the independent variable (Framework Acceptance) and the independent variable (Importance attached to Negotiating) indicates that the Framework presented is more likely to be accepted and adopted the greater the importance attached to negotiating skills within systems development. Conversely, poor framework acceptance can be predicted of importance attached to low negotiating skills.

The R-Squared statistic indicates that the model as fitted explains 7.48531% of the variability in FwkAcceptance. The correlation coefficient is 0.27, indicating a relatively weak relationship between the variables. The Durbin-Watson (DW) statistic tests the residuals to determine if there is any significant correlation based on the order in which they occur in your data file. Since the P-value is greater than 0.05, there is no indication of serial autocorrelation in the residuals.

A positive relationship was expected. While there is no literature to bear this out because the model is an original contrib ution, the relationship can be explained by understanding that the aim of the framework is to improve systems delivery with the use of negotiating skills. This, and the fact that the importance of participating, negotiating and communicating has been emphasised as key to resolving conflict (Dahlbom and Mathiassen, 1993), suggests that framework presented is more likely to be accepted and adopted if more importance is attached to negotiating skills within systems development.

SUB-HYPOTHESIS 3c: The acceptance of the proposed framework depends on the conflict inherently experienced in the team.

REFER TO APPENDIX Q

The output shows the results of fitting a linear model to describe the relationship between FwkAcceptance and Conflict. The equation of the fitted model is

FwkAcceptance = 18.7261 + 0.18973*Conflict

Since the P-value in the ANOVA table is greater than 0.10, there is no statistically significant relationship between FwkAcceptance and Conflict at even the 90% confidence level. This means that the independent variable has no significant effect on the dependant variable.

The R-Squared statistic indicates that the model explains 1.53872% of the variability in FwkAcceptance. The correlation coefficient equals 0.124045, indicating a weak relationship between the variables. The Durbin-Watson (DW) statistic tests the residuals to determine if there is any significant correlation based on the order in which they occur in your data file. Since the P-value is less than 0.05, there is an indication of poss ible serial correlation.

Again, the results were unexpected as some form of relationship between negotiating skills and the acceptance of the framework was anticipated, be it positive or negative. The results of this sub-hypothesis therefore raised some scepticism about the results of sub-hypothesis 1a, where all respondents admitted that they experienced very little conflict in their environment. Some doubt arose as to whether the respondents were impartial in their evaluation of the conflict they

experienced. For this reason, a causal relationship between conflict and framework acceptance did not emerge. A larger sample population may have indicated otherwise, in which case there is opportunity to explore this further.

SUB-HYPOTHESIS 3d: The acceptance of the proposed framework depends on the role of the respondent within the SDLC.

REFER TO APPENDIX R

Roles Accepting the Framework					
	Total	**Yes**		**No**	
		Count	**%**	**Count**	**%**
Planning	114	93	82	21	18
Analysis	109	87	80	22	20
Design	105	82	78	23	22
Implementation	110	85	77	25	23
Support	86	64	74	22	26

Table 20 Frequencies showing Roles Accepting Framework

The table above indicates favourable results towards the accepting of the framework presented in the questionnaire by the majority of the respondents across all the roles. The Kruskall-Wallis test indicates that this acceptance does not depend on the role of the respondent. In other words, there is no variation of acceptance across the different roles.

The Kruskal-Wallis test tests the null hypothesis that the medians within each of the 5 roles are the same. The data from all the columns is first combined and ranked from smallest to largest. The average rank is then computed for the data in each column. Since the P-value is greater than or equal to 0.05, there is not a statistically significant difference amongst the medians at the 95.0% confidence level. Translated, this means that none of the roles of the SDLC showed significant acceptance of the framework.

The expectations of this sub-hypothesis parallel those of sub-hypothesis 1a. The literature suggests that conflicts and contradictions arise spuriously within the project group and that

conflicts arise between the different system roles in relation to the project aims (Dahlbom and Mathiassen, 1993). Further, as Schach (1990), Dahlbom and Mathiassen (1993) and Walsham (1993) argue that planners and analysts need to be more strongly equipped with negotiating skills than the other roles, it was expected that these roles would more readily accept the framework than any other roles. The unexpected result may however be explained assuming that all the roles need to improve their negotiating skills by modelling their approaches to systems development on the framework.

SUB-HYPOTHESIS 3e: The acceptance of the proposed framework depends on the number of roles the respondent has.

REFER TO APPENDIX S

Single Roles vs. Multi-Roles Accepting the Framework					
	Total	**Yes**		**No**	
		Count	**%**	**Count**	**%**
One Role	25	22	88	3	12
Many Roles	130	100	77	30	23

Table 21 Frequencies showing Single vs. Multi-Roles Accepting Framework

The table above indicates favourable results towards the accepting of the framework presented in the questionnaire by the majority of the respondents, regardless of whether they are involved in only one role or many. The Kruskall-Wallis test supports the descriptive statistics. The test reveals that there is no variation of acceptance across the number of different roles. The Kruskal-Wallis test tests the null hypothesis that the medians within each of the 2 factors is the same. The data from all the columns is first combined and ranked from smallest to largest. The average rank is then computed for the data in each column. Since the P-value is greater than or equal to 0.05, there is not a statistically significant difference amongst the medians at the 95.0% confidence level. This means that neither of the two factors entails significant differences in acceptance of the framework.

Despite the above results, it is interesting to note that the descriptive statistics indicate that respondents involved in one role more readily accepted the framework than those involved in

many. This may be explained by the findings of sub-hypothesis 1b, which indicated that respondents involved in one role, experienced a slightly greater degree of conflict than those involved in many. As the literature supports that by negotiating, conflicts are more easily dealt with (Kuechle, 1990, Fisher and Ury, 1991 and Dana, 1990), it makes sense that the respondents involved in one role and who seemingly experience more conflict (sub-hypothesis 1b), would more readily accept the framework than those who do not.

SUB-HYPOTHESIS 3f: The acceptance of the proposed framework depends on the systems development methodology adopted.

REFER TO APPENDIX T

Methodologies Accepting the Framework					
	Total	**Yes**		**No**	
		Count	**%**	**Count**	**%**
B31: Prototype	55	36	65	19	35
B32: RAD	55	44	80	11	20
B33: Structured	93	71	76	22	24
B34: Unstructured	35	25	71	10	29
B35: JAD	79	60	76	19	24

Table 22 Frequencies showing Methodologies Accepting Framework

The table above summarises favourable results towards accepting the framework presented in the questionnaire by the majority of the respondents across all the methodologies. The Kruskall-Wallis test supports the descriptive statistics. It tests the null hypothesis that the medians within each of the methodologies are the same. The data from all the columns is first combined and ranked from smallest to largest. The average rank is then computed for the data in each column. Since the P-value is greater than or equal to 0.05, there is not a statistically significant difference amongst the medians at the 95.0% confidence level. This test reveals that no methodology attached any significant acceptance of the framework. The percentage frequencies however reveal that RAD methodology is more accepting of the framework than that of the Prototype methodology. The existing literature does not provide any hint as to what would explain such a finding. An evaluation of the reasons for accepting the framework may shed some light on the

matter however. A tabulation of these reasons can be found in Appendix X, the results of which are discussed in sub-hypothesis 3g.

SUB-HYPOTHESIS 3g: Reasons for accepting the framework varies across the different roles.
REFER TO APPENDIX U

	Planning 114		**Analysis 109**		**Design 105**		**Implement-ation 110**		**Support 86**	
	Count	%	Count	%	Count	%	Count	%	Count	%
It applies Negotiating skills to our line of work	67	59	65	60	60	57	58	53	45	52
It assists us in getting what we need when we negotiate with others during systems development	76	67	73	67	66	63	67	61	50	58
Negotiating is a major weakness of system developers	39	34	38	35	35	33	32	29	20	23
System Developers really need to improve their negotiating skills	56	49	52	48	48	46	49	45	33	38
Improved Negotiating skills will undoubtedly lead to improved systems development	65	57	57	52	56	53	58	53	44	51
It increases our awareness of negotiating at each phase of systems development	69	61	63	58	57	54	58	53	41	48
It serves as a checklist so that I can monitor where I am failing when I negotiate with others	57	50	54	50	52	50	51	46	35	41

Table 23 Frequencies showing Reasons for Accepting Framework across the Roles

The tabulated data above reveals that all roles accepted the framework mostly because it would assist them in getting what they need when they negotiate with others during systems development. Unfortunately ranked second is the fact that it applies negotiating skills to their line of work. Planners also highly favoured the framework for its ability to increase their awareness of negotiating at each phase of the SDLC.

The results also indicate an agreement that Improving Negotiating skills will undoubtedly lead to improved systems development, albeit not a very strong agreement. The literature presented

supports this reason as Robey and Markus (1984) view systems development as both political and rational. It is essential for those engaged in the process to be aware of the rituals in systems development. Amidst all the conflict and power struggles that arise in systems development as well as the decision making that is required to be done in systems development, it comes as no surprise that communication and negotiating skills will improve an IT project.

The Kruskall-Wallis test tests the null hypothesis that the medians across all the reasons are the same. Since the P-value is greater than or equal to 0.05 for all reasons, there is not a statistically significant difference amongst the medians at the 95.0% confidence level. We can therefore safely conclude that the reasons for accepting the framework are independent of the role of the respondent.

SUB-HYPOTHESIS 3h: Framework Acceptance depends on Skills, Conflict, Improvement and Importance.

REFER TO APPENDIX V

(a) The output shows the results of fitting a multiple linear regression model to describe the relationship between FwkAcceptance and the 4 independent variables (Skills, Conflict, Improvement and Importance). The equation of the fitted model is

FwkAcceptance = 14.007 - 0.126826*Skills + 0.0193008*Conflict + 0.751126*Improv + 0.709392*Importance

Since the P-value in the ANOVA table is less than 0.01, there is a statistically significant relationship between the variables at the 99% confidence level.

The R-Squared statistic indicates that the model as fitted explains 33.7335% of the variability in FwkAcceptance. The adjusted R-squared statistic, which is more suitable for comparing models with different numbers of independent variables, is 31.9664. The Durbin-Watson (DW) statistic tests the residuals to determine if there is any significant correlation based on the order in which

they occur in your data file. Since the P-value is less than 0.05, there is an indication of possible serial correlation.

In determining whether the model can be simplified, notice that the highest P-value on the independent variables is 0.8547, belonging to Conflict. Since the P-value is greater or equal to 0.10, that term is not statistically significant at the 90% or higher confidence level. This means that there is no significant relationship between Conflict and Framework Acceptance. Consequently, the regression was re-tested but with the removal of the Conflict variable from the model.

(b) The output shows the results of fitting a multiple linear regression model to describe the relationship between FwkAcceptance and the 3 independent variables (Skills, Improvement and Importance). The equation of the fitted model is

FwkAcceptance = 14.298 - 0.128957*Skills + 0.753233*Improv + 0.715671*Importance

Since the P-value in the ANOVA table is less than 0.01, there is a statistically significant relationship between the variables at the 99% confidence level.

The R-Squared statistic indicates that the model as fitted explains 33.7186% of the variability in FwkAcceptance. The adjusted R-squared statistic, which is more suitable for comparing models with different numbers of independent variables, is 32.4018%. The Durbin-Watson (DW) statistic tests the residuals to determine if there is any significant correlation based on the order in which they occur in your data file. Since the P-value is less than 0.05, there is an indication of possible serial correlation. Once again, the model can be simplified by removing Importance variable from the regression, as it has the highest P-value (0.0770). Since the P-value is less than 0.10, that term is statistically significant at the 90% confidence level. This means that there is a significant relationship between negotiating skills, the improvement of negotiating skills, the importance attached to negotiating skills and framework acceptance. Framework acceptance can thus be explained by all of these three variables.

(c) The Regression was re-tested, this time with only the two variables (Skills and Improvement). The output shows the results of fitting a multiple linear regression model to describe the relationship between FwkAcceptance and these 2 independent variables. The equation of the fitted model is

FwkAcceptance = 14.571 - 0.102957*Skills + 0.823087*Improv

Since the P-value in the ANOVA table is less than 0.01, there is a statistically significant relationship between the variables at the 99% confidence level. This means that framework acceptance is best explained by the two variables negotiating skills and improvement of negotiating skills.

The R-Squared statistic indicates that the model as fitted explains 32.3272% of the variability in FwkAcceptance. The adjusted R-squared statistic, which is more suitable for comparing models with different numbers of independent variables, is 31.4368%. The Durbin-Watson (DW) statistic tests the residuals to determine if there is any significant correlation based on the order in which they occur in your data file. Since the P-value is less than 0.05, there is an indication of possible serial correlation.

The above regression analyses yield original findings in that the framework has not been tested before. The results of regression analysis (a) reveal that there is a significant relationship between framework acceptance and all four variables i.e. skills, conflict, improvement and importance. This result was anticipated. It makes sense that the respondent who either possessed strong negotiating skills, experienced a great deal of conflict, appreciated the importance of negotiating skills or even made efforts to improve them, would be more likely to accept the framework in the field of systems development. The analysis however prompted the elimination of the weakest of these variables, and a re-test of the regression. The findings of regression (b) revealed a significant relationship between framework acceptance and the remaining variables. The analysis further prompted the elimination of the weakest variable – the importance variable. The final regression analysis (c) confirms that framework acceptance is best explained by the two variables, negotiating skills and improvement of negotiating skills. Despite the fact that several tests were conducted to obtain the variables that best explain the acceptance of the

framework, all four variables bear a significant effect on framework acceptance, although not all with equal strength.

Summary of Main Hypothesis 3

MAIN HYPOTHESIS 3: ACCEPTANCE OF THE PROPOSED FRAMEWORK WILL VARY	**RESULTS**
SUB-HYPOTHESIS 3a: The acceptance of the proposed framework depends on the individual's ability to negotiate.	REJECT
SUB-HYPOTHESIS 3b: The acceptance of the proposed framework depends on the importance the individual attaches to negotiating within the SDLC.	ACCEPT
SUB-HYPOTHESIS 3c: The acceptance of the proposed framework depends on the conflict inherently experienced in the team.	REJECT
SUB-HYPOTHESIS 3d: The acceptance of the proposed framework depends on the role of the respondent within the SDLC.	REJECT
SUB-HYPOTHESIS 3e: The acceptance of the proposed framework depends on the number of roles the respondent has.	REJECT
SUB-HYPOTHESIS 3f: The acceptance of the proposed framework depends on the systems development methodology adopted.	REJECT
SUB-HYPOTHESIS 3g: Reasons for accepting the framework varies across the different roles.	REJECT
SUB-HYPOTHESIS 3h: Framework Acceptance depends on skills, conflict, improvement and importance.	ACCEPT
RESULT OF MAIN HYPOTHESIS 3	**REJECT**

Table 24 Summary of Results of Main Hypothesis 3

6.3.4 MAIN HYPOTHESIS 4: IMPROVEMENT OF NEGOTIATING SKILLS VARIES IN SDLC

SUB-HYPOTHESIS 4a: Different roles within System Development Teams seek to improve their negotiation skills.

REFER TO APPENDIX W

		Question B17 I consciously try and make use of the negotiating techniques I am familiar with		Question B19 I read books on negotiation to improve my negotiation skills		Question B20 I attend negotiating courses to improve my negotiating skills		Question B21 I try imitate and learn skills of a good colleague negotiator to improve my negotiating skills		Question B25 I feel that my negotiating skills need to be improved		Avg
	Count	Avg	%	Avg	%	Avg	%	Avg	%	Avg	%	%
Planning	114	3.77	75	2.26	45	2.12	42	3.68	74	3.61	72	62
Analysis	109	3.82	76	2.29	46	2.12	42	3.61	72	4.20	84	64
Design	105	3.69	74	2.09	42	1.93	39	3.48	70	4.07	81	61
Implement	110	3.69	74	2.13	43	1.94	39	3.51	70	3.62	72	60
Support	86	3.59	72	2.00	40	1.87	37	3.43	69	3.99	80	60

Table 25 Frequencies showing the Improvement of Negotiating Skills across Roles

The descriptive statistics tabulated above distinctly show that all roles feel their negotiating skills need to be improved, and that they try making use of the negotiating techniques they are familiar with. Additionally, all roles try imitating the skills of good negotiators to improve their own negotiating skills. It is interesting to note that of all the roles, Analysts feel they need to improve their negotiating skills the most, as indicated by the average across the roles. None of the roles make an active effort to improve their negotiating skills. These findings are supported by the ANOVA, which decomposes the variability of Improvement into the various roles. The P-values test the statistical significance of each of the roles. Since 3 P-values are less than 0.05, these factors have a statistically significant effect on Improvement at the 95.0% confidence level. These factors are analysis, design and support. This means that analysts, designers and supporting roles have a significant interest to improve their negotiating skills. These results were anticipated.

The literature as well as the results of sub-hypothesis 1a supports the findings. As conflicts and contradictions arise spuriously within the project group, conflicts arise between the different system roles in relation to the project aims (Dahlbom and Mathiassen, 1993). Further, as Schach (1990), Dahlbom and Mathiassen (1993) and Walsham (1993) suggest that planners and analysts

need to be more strongly equipped with negotiating skills than the other roles. It was therefore expected that these roles would feel the need to improve on their negotiating skills than others.

SUB-HYPOTHESIS 4b: All Methodologies seek to improve their negotiation skills equally.

REFER TO APPENDIX X

		Question B17 I consciously try and make use of the negotiating techniques I am familiar with		**Question B19** I read books on negotiation to improve my negotiation skills		**Question B20** I attend negotiating courses to improve my negotiating skills		**Question B21** I try imitate and learn skills of a good colleague negotiator to improve my negotiating skills		**Question B25** I feel that my negotiating skills need to be improved		**Avg**
	Count	Avg	%	Avg	%	Avg	%	Avg	%	Avg	%	%
Prototyping	55	3.9273	79	2.2364	45	2.0727	41	3.6546	73	3.4909	70	62
RAD	55	3.8000	76	2.2364	45	1.9455	39	3.6546	73	3.5273	71	61
Structured	93	3.7634	75	2.1936	44	2.1398	43	3.6667	73	3.7419	75	62
Unstructured	35	3.5429	71	2.0857	42	1.8000	36	3.6571	73	3.6571	73	59
JAD	79	3.9367	79	2.4051	48	2.2405	45	3.7089	74	3.6456	73	64

Table 26 Frequencies showing the Improvement of Negotiating Skills across Methodologies

The descriptive statistics tabulated above distinctly show that respondents from the various methodologies feel their negotiating skills need to be improved, and that they try making use of the negotiating techniques they are familiar with. The respondents also make an effort at imitating skills of good negotiators to improve their negotiating skills. It appears that the methodology adopted has no real bearing on the importance respondents attach to negotiating.

The ANOVA table confirms the above findings by decomposing the variability of Improvement into the various methodologies. The P-values test the statistical significance of each of the methodologies. Since no P-values are less than 0.05, none of the factors have a statistically significant effect on Improvement at the 95.0% confidence level. This means that no methodology showed significantly different interest to improve on negotiating skills. Despite this finding, the tabulations above reveal that the JAD methodology ranked improvement on negotiating skills the highest on average above the other methodologies. Nunamaker, (1992) justifies this finding by explaining that JAD sessions suffer from dominant personalities,

introvert personalities, and politics which exist amongst superiors and subordinates. Similarly, Whitten et al (1994) who favour the JAD methodology maintain that it encourages increased participation with all stakeholders of the project and ultimately conflict handling.

SUB-HYPOTHESIS 4c: Improvement of negotiating skills varies according to conflict experienced.

REFER TO APPENDIX Y

The output shows the results of fitting a linear model to describe the relationship between and Improvement of Negotiating skills and Conflict. The equation of the fitted model is

Improv = 9.28438 + 0.129161*Conflict

Since the P-value in the ANOVA table is less than 0.10, there is a statistically significant relationship between Improv and Conflict at the 90% confidence level.

The R-Squared statistic indicates that the model as fitted explains 1.8032% of the variability in Improvement. The correlation coefficient is 0.134, indicating a relatively weak relationship between the variables. The Durbin-Watson (DW) statistic tests the residuals to determine if there is any significant correlation based on the order in which they occur in your data file. Since the P-value is greater than 0.05, there is no indication of serial autocorrelation in the residuals.

Again, this inverse relationship between the dependant variable (Improvement of Negotiating Skills) and the independent variable (Conflict) makes sense, as the more attention and interest is paid to improving negotiating capabilities, the lower the degree of conflict that will be experienced. Conversely, the less attention paid to improving negotiating capabilities, the greater the conflict that will be experienced in the SDLC.

These findings parallel those of sub-hypothesis 1e. The implication that arises due to the positive relationship between negotiation skills and conflict is that the recognition that negotiation skills are important for conflict resolution may lead to efforts to work on or improve current negotiating skills, and ultimately lessen the amount of conflict experienced. Dahlbom and

Mathiassen (1993) repeatedly stress the importance of participating, negotiating and communicating in order to resolve conflict. Leritz (1991) supports this by saying that communicating the importance of negotiating skills from the top down, and implementing procedures to develop such skills, usually makes the difference between high achievement and mediocrity – or even failure. Conflict will persist, unless the importance of negotiating skills is addressed in organisations (Fisher and Ury; 1991 Dana, 1990).

Summary of Main Hypothesis 4

MAIN HYPOTHESIS 4: **IMPROVEMENT OF NEGOTIATING SKILLS VARIES IN SDLC**	**RESULTS**
SUB-HYPOTHESIS 4a: Different roles within System Development Teams seek to improve their negotiation skills.	ACCEPT
SUB-HYPOTHESIS 4b: All Methodologies seek to improve their negotiation skills equally.	REJECT
SUB-HYPOTHESIS 4c: Improvement depends on Conflict.	ACCEPT
RESULT OF MAIN HYPOTHESIS 4	**ACCEPT**

Table 27 Summary of Results of Main Hypothesis 4

6.3.5 MAIN HYPOTHESIS 5: IMPORTANCE OF NEGOTIATING SKILLS VARIES IN SDLC

SUB-HYPOTHESIS 5a: Different roles within System Development Teams deem it important to have negotiating skills

REFER TO APPENDIX Z

		Question B6 In my job it is important to have negotiating skills	
	Count	Avg	%
Planning	114	4.20175	84
Analysis	109	4.20183	84
Design	105	4.06667	81
Implement	110	4.10909	82
Support	86	3.98837	80

Table 28 Frequencies showing the Importance of Negotiating Skills across Roles

All roles rated the importance of having negotiating skills in their jobs exceptionally highly. There was not however, a role which significantly differed in opinion. This is supported by the Kruskal-Wallis test, which tests the null hypothesis that the medians within each of the 5 roles, is the same. The data from all the columns is first combined and ranked from smallest to largest. The average rank is then computed for the data in each column. Since the P-value is greater than or equal to 0.05, there is not a statistically significant difference amongst the medians at the 95.0% confidence level. This means that no role significantly differed from any other when it came to ranking the importance of negotiating skills.

These results differ from the literature, which suggests that planners and analysts are more strongly equipped with negotiating skills than the other roles (Schach, 1990; Dahlbom and Mathiassen, 1993; Walsham, 1993), and thus tend to attach greater importance to negotiating. The tabulations provided some slight support for this statement. Although respondents all equally attached considerable importance to negotiating, planners and analysts attached slightly more importance than those involved in support. This is primarily due to the fact that planners and analysts are in the forefront of interacting with clients, gathering requirements, analysing them, and justifying which can or cannot be done. These tasks are heavily reliant on their interpersonal skills. It therefore makes sense that they will attach more importance to negotiating.

SUB-HYPOTHESIS 5b: The Importance of negotiating skills varies with methodologies.

REFER TO APPENDIX AA

		Question B6 In my job it is important to have negotiating skills	
	Count	Avg	%
Prototyping	55	4.2182	84
RAD	55	4.1091	82
Structured	93	4.1505	83
Unstructured	35	4.0286	81
JAD	79	4.2405	85

Table 29 Frequencies showing the Importance of Negotiating Skills across Methodologies

Once again, all methodologies rated the importance of having negotiating skills in their jobs exceptionally highly, with no one methodology ranking the importance of negotiating skills significantly higher than the rest. An ANOVA test confirms this, by calculating a statistically insignificant difference between the means of the methodologies at the 95.0% confidence level. This is because the P-value of the ANOVA F-test is greater than or equal to 0.05. A Kruskal-Wallis test further confirms this result since the P-value of the test is greater than or equal to 0.05. There is therefore, not a statistically significant difference amongst the medians at the 95.0% confidence level. These results were neither expected or unexpected, as this test probed a previously unexplored area of research, and it remained uncertain as to which methodology, if any, would attach greater importance to negotiating skills.

Despite the above test results, the tabulation above indicates that the JAD and Prototyping methodologies rank the importance of negotiating slightly higher than the other methodologies. This can be explained by the works of Martin (1991) who researched the benefits of prototyping and reported that prototyping provides hands-on communication throughout the development process and is used, as a communication tool to assess and meet user information needs. Prototypes are further used as part of a mutual learning process for the user and analyst, thus diminishing the possibilities of communications problems and conflicts (Dearnley and Mayhew, 1983). In favour of the JAD approach, Whitten et al (1994) maintain that the JAD approach requires increased participation, improved relationships between participants, improved gathering of client requirements and ultimately better conflict handling. These reasons suggest a possible explanation why the JAD approach and Prototyping methodology attached greater value and importance to the need for negotiating in the SDLC.

SUB-HYPOTHESIS 5c: Importance depends on Improvement, Conflict and Skills.

REFER TO APPENDIX AB

The output shows the results of fitting a multiple linear regression model to describe the relationship between Importance and the three independent variables, Improvement, Conflict and Skills.

The equation of the fitted model is

Importance = 0.0471464 + 0.0384979*Skills + 0.0945086*Improv + 0.0219918*Conflict

Since the P-value in the ANOVA table is less than 0.01, there is a statistically significant relationship between the variables at the 99% confidence level.

The R-Squared statistic indicates that the model as fitted explains 22% of the variability in Importance. The adjusted R-squared statistic, which is more suitable for comparing models with different numbers of independent variables, is 20%. The Durbin-Watson (DW) statistic tests the residuals to determine if there is any significant correlation based on the order in which they occur in your data file. Since the P-value is greater than 0.05, there is no indication of serial autocorrelation in the residuals.

The results explain that the conflict experienced within the SDLC, the skill set that the role players of the SDLC possess as well as the efforts made to improve on negotiating skills, are all positively related to the importance attached to negotiating. Although no literature exists to directly support the finding, it can be argued that an individual will attach more importance to negotiating within the SDLC as a greater level of conflict is experienced, as greater efforts are made to improve on negotiating skills, as well as the greater the level of negotiating skills. This makes sense as those experiencing great levels of conflict within the SDLC will find it important to introduce negotiating techniques to resolve such conflicts. Similarly, individuals who deliberately seek to improve their negotiating abilities surely do so, so as to be equipped with negotiating skills to combat conflict. These individuals undoubtedly see the importance of using these skills in resolving conflicts that they may experience within the SDLC. Finally, individuals that are innately better negotiators than others will derive benefits from these skills, and will therefore also see the direct relevance and importance of negotiating skills within the SDLC.

Summary of Main Hypothesis 5

MAIN HYPOTHESIS 5: **IMPORTANCE OF NEGOTIATING SKILLS VARIES IN SDLC**	**RESULTS**
SUB-HYPOTHESIS 5a: Different roles within System Development Teams deem it important to have negotiating skills.	REJECT
SUB-HYPOTHESIS 5b: The Importance of negotiating skills varies with methodologies.	REJECT
SUB-HYPOTHESIS 5c: Importance depends on Improvement, Conflict and Skills.	ACCEPT
RESULT OF MAIN HYPOTHESIS 5	**REJECT**

Table 30 Summary of Results of Main Hypothesis 5

6.4 SUMMARY OF ALL HYPOTHESES

The hypotheses were established by either accepting or rejecting the sub-hypotheses. A hypothesis was rejected or accepted if the majority of the sub-hypotheses were rejected or accepted, respectively. The table below summarises the findings:

MAIN HYPOTHESIS	**RESULT**
Main Hypothesis 1: The Conflict Experienced varies in the SDLC	REJECT
Main Hypothesis 2: Negotiation Skills vary in the SDLC	ACCEPT
Main Hypothesis 3: Acceptance of the Proposed Framework will vary	REJECT
Main Hypothesis 4: Improvement of Negotiating Skills varies in the SDLC	ACCEPT
Main Hypothesis 5: Importance of Negotiating Skills varies in the SDLC	REJECT

Table 31 Summary of Main Hypotheses

6.5 CONCLUSION

Chapter six provided on overview of the research findings of the empirical study that was undertaken to determine whether the negotiating skills improved systems delivery. The Main

Hypotheses were tested by accepting or rejecting a number of sub-hypotheses. The sub-hypotheses that were accepted provided the following insights:

The conflict experienced within system development teams depends largely on the negotiating skills of the role players. Greater conflict is experienced among respondents who have weaker negotiating capabilities. Similarly, a lower degree of conflict is experienced by those who have stronger negotiating capabilities. Dana (1990) reaffirms this by explaining that the less effectively we mange differences, the more conflict we experience.

All roles within system development teams comprise of individuals with varying negotiating skills. Planners appeared to have stronger negotiating skills than other roles. Szymanski et al. (1991) explain that system planning and analysis roles are more involved with communicating, problem solving and justifying decisions, and would thus require substantial negotiating capabilities.

Developers require most negotiating skills within the team. As system design involves the development of information system according to specifications provided by systems analysts, a great deal of communication is required between these two parties. Conflict arises between these parties when requirements start to change and different approaches to system design need to be adopted. Conflict may also arise between developers, as they negotiate the best manner in which to approach the system design (Hirschheim and Klein, 1989).

Planners and analysts require most negotiating skills outside the team. Again, Szymanski et al. (1991) explain that system planning and analysis roles require substantial negotiating capabilities as they are mostly in the forefront of gathering, assessing, and negotiating on the manner in which to approach the design for the system as well as communicating and negotiating with the designers who build the system.

Negotiating skills vary according to the systems development methodology adopted. Unstructured Methodologies had a statistically significant effect on negotiating skills. Martin

(1991) justifies this finding by explaining that success in system delivery is not attainable through the use of rigid methodologies, which hamper communication and information sharing.

The acceptance of the proposed framework depends on the importance the individual attaches to negotiating within the SDLC. The fact that the importance of participating, negotiating and communicating has been emphasised as key to resolving conflict (Dahlbom and Mathiassen, 1993), it can be deduced that framework presented is more likely to be accepted and adopted, the greater the importance that is attached to negotiating skills within systems development.

Different roles within System Development Teams seek to improve their negotiation skills. It was discovered that analysts, designers and supporting roles have a significant interest to improve their negotiating skills. Dahlbom and Mathiassen (1993) as well as Walsham (1993) express that planners and analysts need to be more strongly equipped with negotiating skills than the other roles as conflicts and contradictions arise spuriously between these roles in relation to the project aims.

Efforts to improve negotiation skills depend on the conflict experienced. As the more attention and interest is paid to improving negotiating capabilities, the lower the degree of conflict that will be experienced. Conversely, the less attention paid to improving negotiating capabilities, the greater the conflict that will be experienced in the SDLC. Fisher and Ury (1991) and Dana (1990) support the finding by stating that conflict will persist, unless the importance of negotiating skills is addressed in organisations.

Importance depends on Improvement, Conflict and Skills. The greater the conflict experienced, the more efforts made to improve on negotiating skills, as well as the level of negotiating skills, all directly affect the importance that an individual will associate with negotiating within the SDLC.

Despite the fact that the remaining sub-hypotheses were rejected, the analyses have provided greater insight as to what the current systems development environment is experiencing. Most results were surprising, but in themselves they lay a foundation for more extensive research in

the future. Chapter seven will provide a summary of the research, implications for system development teams as well as recommendations for future research.

CHAPTER SEVEN

CONCLUSION AND RECOMMENDATIONS FOR FUTURE RESEARCH

7.1 INTRODUCTION

Though conflict is deemed an important topic in systems development, few studies have examined interpersonal conflict, the management of this conflict, or the impact this conflict has on project outcomes (Barki and Hartwick, 2001). The aim of this study was to consider organisational behavioural means, in particular the importance of negotiating within the systems development process and to ultimately improve systems development with the use of an original framework designed to assist IT professionals in implementing sound negotiating strategies, at every phase of the Systems Development Life Cycle (SDLC).

The research broke into new grounds for system development professionals, the findings of which provided valuable insight into the degree of conflict currently experienced in the systems development environment, and it identified the need for negotiating skills to adequately manage the conflict. It also provided a better understanding of the importance attached to negotiating abilities, and compared the findings across different roles within the team as well as across different types of systems methodologies adopted. The research further contributed a framework for negotiating within the systems development life cycle and serves as a model against which system development teams can monitor themselves, and improve their systems deliverables.

Results of existing literature studies were both contradictory and supportive. A possible reason for this inconsistency may be attributed to the personal nature of the study. It is possible that some respondents did not want to present themselves in a negative light, or criticise their current practices, thus responding favourably to the questions. Other respondents, who may have been concerned about how others would perceive their responses, could change the conclusions drawn from this study considerably. This is commonly known as the Hawthorne effect, which refers to

distortions in behaviour, which may occur when respondents know they are being observed (Cooper and Schindler, 1998). This and the fact that questions directed at the respondents were quite personal in nature meant that there is a possibility that respondents answered in a favourable manner, and not in an objective manner. Other limitations, discussed previously in section 5.8, may have also negatively affected the response rate, thus yielding results conflicting those of existing literature studies.

In this chapter the results of the research presented in chapter six will be summarised. In addition, implications of the research will be discussed, followed by suggestions for future research.

7.2 SUMMARY OF THE RESEARCH

From the outset of the research project, clearly identifiable objectives were established, which will be discussed below:

7.2.1 Research Characteristics

The reach of the research was limited to organisations in Southern Africa. These organisations were either large software development houses, or small IT departments within organisations, which specialised in developing either outsourced systems or in-house systems. Self-administered questionnaires were mailed out to system development teams in South Africa, working in varying industries, and a total sample of one hundred and fifty five respondents replied. A quantitative approach was adopted to analyse the data. This research was classified as a hypothesis-generating study. The hypotheses were established by either accepting or rejecting the sub-hypotheses. A hypothesis was rejected or accepted if the majority of the sub-hypotheses were rejected or accepted, respectively.

7.2.2 Summary of the Research Objectives

The first objective of the research was to provide a comprehensive appraisal of the systems development process as a political and social process within which conflict is an imminent threat

to the success of system deliverables. The literature presented an argument in favour of implementing negotiating skills to manage this conflict.

The second objective of the research was to assess whether system development is currently experienced as a process of conflict and to ascertain which roles and methodologies experience a greater degree of conflict. The research aimed to assess whether negotiating skills varied across the different roles and methodologies, and whether respondents attached importance to the subject or showed interest to improve negotiating skills.

Finally, the research presented a negotiating framework whereby the objective was to determine whether the proposed framework would improve systems delivery. This objective was met through a valid and extensive empirical study.

7.2.3 Summary of the Empirical Findings

7.2.3.1 Main Hypothesis 1

The Conflict Experienced varies in the SDLC

This hypothesis was established by either accepting or rejecting six sub-hypotheses. Since four of the six sub-hypotheses were rejected, Main Hypothesis 1 was rejected. **Table 32** provides a summary of these results.

MAIN HYPOTHESIS 1	RESULTS
SUB-HYPOTHESIS 1a: All roles within system development teams experience varying degrees of conflict	REJECT
SUB-HYPOTHESIS 1b: Respondents with several roles experience more conflict than those with only one	REJECT
SUB-HYPOTHESIS 1c: Conflict experienced varies according to the methodology adopted **SUB-HYPOTHESIS 1d**: Teams using more than one methodology experience more conflict than those using only one	REJECT REJECT
SUB-HYPOTHESIS 1e: Conflict experienced depends on negotiating skills	ACCEPT
MAIN HYPOTHESIS 1: THE CONFLICT EXPERIENCED VARIES IN THE SDLC	**REJECT**

Table 32 Summary of Results for Main Hypothesis 1

More specifically this meant that:

- All roles experienced low levels of conflict in their day-to-day jobs. Analysts and planners experienced a slightly higher degree of conflict with clients and within the team. Support roles experienced the least amount of conflict. Schach (1990), Dahlbom and Mathiassen (1993) and Walsham (1993) support this by stating that planners and analysts need to be more strongly equipped with negotiating skills than the other roles.

- Respondents involved in one or many roles equally experienced low degrees of conflict. Albeit not a very strong degree of support, there is an indication that respondents having only one role experienced slightly more conflict when interacting with clients, than those who were involved in more than one role. Whitten et al (1994) support this finding by pointing out that greater participation in the SDLC leads to increased interaction between participants, increased conflict resolution as a result of pressures such as timeous system delivery and lower costs by fitting requirements correctly specified.

- Respondents using different types of methodologies were equally neutral about the low degree of conflict experienced. It was established that less conflict is experienced in Unstructured Methodologies. This is supported by Martin (1991). He maintains that structured methodologies are weak in that it is difficult for users to know what they need

before they had hands-on use of some version of the IS, and narrative descriptions of an IS do not adequately communicate the reality and dynamics of an IS to users. These problems inevitably create conflict among the users and the development team.

- There was no distinct variance between the responses of those who used only one systems methodology as opposed to those who made use of a combination. All respondents adopted a neutral stance although one methodology experienced a slightly higher degree of conflict. Avison and Taylor (1997) argue that those using only one methodology experience a slightly higher degree of conflict as complex problem situations may consist of two or more of the problems situations which require a contingency approach to IS development.

- Greater conflict was experienced among respondents who had weaker negotiating capabilities. Similarly, those with stronger negotiating capabilities experienced a lower degree of conflict in their role. Fisher and Ury (1991) explain that on the grounds that conflict is a growth industry, so more and more occasions require negotiation skills.

7.2.3.2 Main Hypothesis 2

Negotiation Skills vary in the SDLC

This hypothesis was established by either accepting or rejecting six sub-hypotheses. Since four of the six sub-hypotheses were accepted, Main Hypothesis 2 was accepted. **Table 33** provides a summary of these results.

MAIN HYPOTHESIS 2	RESULTS
SUB-HYPOTHESIS 2a: All roles within system development teams comprise of individuals with varying negotiating skills.	ACCEPT
SUB-HYPOTHESIS 2b: Developers require most negotiating skills within the team.	ACCEPT
SUB-HYPOTHESIS 2c: Planners and analysts require most negotiating skills outside the team.	ACCEPT
SUB-HYPOTHESIS 2d: Respondents with several roles are most skilled at negotiating	REJECT
SUB-HYPOTHESIS 2e: Respondents who are more technical in nature are less skilled	REJECT

at negotiating.	
SUB-HYPOTHESIS 2f: Negotiating skills vary according to the systems development methodology adopted.	ACCEPT
MAIN HYPOTHESIS 2: NEGOTIATION SKILLS VARY IN THE SDLC	**ACCEPT**

Table 33 Summary of Results for Main Hypothesis 2

More specifically this meant that:

- All respondents were equipped with negotiating skills. The factors that were predominantly highly rated, include the abilities to communicate openly, to be creative and flexible. Planners scored slightly higher than the other roles. The literature presented by Szymanski et al. (1991) distinctly describes the different roles as requiring different skills. Where systems design, systems implementation and systems support roles are mostly involved with the technology-related components of the information systems, System planning and analysis roles are more involved with communicating, problem solving and justifying decisions, and would thus require substantial negotiating capabilities.

- The design phase required most negotiating skills within the team. System designers have often been criticised for their technical approach to systems development and their lack of participation in the social components their job necessitates (Hirschheim and Klein, 1989).

- Planners indicated that they required most negotiating skills outside the team. The results confirm with the literature studies. Analysts and planners are constantly interacting with clients, defining problems, gathering requirements, and justifying and negotiating on what can or cannot be delivered (Szymanski et al, 1991).

- Regardless of the number of roles respondents were involved in, they generally still had a high level of negotiating skills. Those involved in one role however, revealed a slightly greater strength in the negotiating skills, compared to those involved in many roles. As Whitten et al (1994) express that greater participation in the SDLC leads to increased

interaction between participants and increased conflict resolution, those involved in more than one role experience greater conflict.

- Respondents who were more technical in nature were less skilled at negotiating. Design, support and implementation roles, felt stronger about this than the other less technical roles. Davenport (1994) criticises this technical approach, as overshadowing a human-centered view of IS development, which fails to encompass all of a company's information, and ultimately undercuts business change.

- Negotiating skills were strong amongst the respondents regardless of the methodology that was adopted. RAD, Prototyping and JAD methodologies ranked the highest on skills, but neither of these had a significant effect on skills. Unstructured methodologies however, had a statistically significant effect on Skills. These findings are supported by Hirschheim and Klein (1989) who maintain that inside knowledge of the different viewpoints of the different stakeholder groupings needs to be acquired by genuine participation to succeed in system delivery. Martin (1991) argues that this is not attainable through the use of rigid methodologies, which hamper communication and information sharing.

7.2.3.3 Main Hypothesis 3

Acceptance of the Proposed Framework will vary

This hypothesis was established by means of either accepting or rejecting eight sub-hypotheses. Since six of the eight sub-hypotheses were rejected, Main Hypothesis 3 was rejected. **Table 34** provides a summary of these results.

MAIN HYPOTHESIS 3	RESULTS
SUB-HYPOTHESIS 3a: The acceptance of the proposed framework depends on the individual's ability to negotiate.	ACCEPT
SUB-HYPOTHESIS 3b: The acceptance of the proposed framework depends on the importance the individual attaches to negotiating within the SDLC.	ACCEPT
SUB-HYPOTHESIS 3c: The acceptance of the proposed framework depends	REJECT

on the conflict inherently experienced in the team.	
SUB-HYPOTHESIS 3d: The acceptance of the proposed framework depends on the role of the respondent within the SDLC.	REJECT
SUB-HYPOTHESIS 3e: The acceptance of the proposed framework depends on the number of roles the respondent has.	REJECT
SUB-HYPOTHESIS 3f: The acceptance of the proposed framework depends on the systems development methodology adopted.	REJECT
SUB-HYPOTHESIS 3g: Reasons for accepting the framework varies across the different roles.	REJECT
SUB-HYPOTHESIS 3h: Framework acceptance depends on skills, conflict, improvement and importance	REJECT
MAIN HYPOTHESIS 3: ACCEPTANCE OF THE PROPOSED FRAMEWORK WILL VARY	**REJECT**

Table 34 Summary of the Results for Main Hypothesis 3

More specifically this meant that:

- No relationship existed between Framework Acceptance and Negotiating Skills. Framework Acceptance could not be predicted by the level of Negotiating Skills. The results were unexpected.

- The Negotiating Framework was more accepted the greater the importance that was attached to negotiating skills within systems development. Conversely, poor framework acceptance could be predicted by lower importance attached to negotiating skills. Dahlbom and Mathiassen (1993) lead us to deduce that framework presented is more likely to be accepted and adopted the greater the importance that is attached to negotiating skills within systems development.

- The degree of conflict experienced had no bearing on the acceptance of the framework. The anticipated causal relationship between conflict and framework acceptance did not emerge.

A larger sample population may have indicated otherwise, in which case there is opportunity to explore this further.

- All roles responded favourably towards the framework. Acceptance across the different roles did not vary. The unexpected result may be explained by the need of all the roles to improve their negotiating skills equally, by modelling their approaches to systems development on the framework (Dahlbom and Mathiassen, 1993).

- Regardless of whether respondents were involved in only one role or many, favourable attitudes were indicated towards the framework. Respondents involved in one role more readily accepted the framework than those involved in many, but in general, the acceptance across the number of different roles did not vary significantly. As the literature supports that by negotiating conflicts are more easily dealt with (Kuechle, 1990, Fisher and Ury, 1991 and Dana,1990), it makes sense that the respondents involved in one role and who seemingly experience more conflict (sub-hypothesis 1b), would more readily accept the framework than those who do not.
- All methodologies indicated favourable attitudes towards the framework. Although the acceptance of the framework across the different methodologies did not vary significantly, the RAD methodology was more accepting than the Prototype methodology. The existing literature does not provide any hint as to what would motivate such a finding.

- All roles accepted the framework mostly because it would assist in getting what they needed when they negotiated with others during systems development. Ranked second is the fact that the framework applied negotiating skills to their line of work. Planners highly favoured the framework for its ability to increase their awareness of negotiating at each phase of the SDLC. A fair amount of agreement was observed, albeit not very strong agreement, that improving negotiating skills would lead to improved systems development.

7.2.3.4 Main Hypothesis 4

Improvement of Negotiating Skills varies in the SDLC

This hypothesis was established by means of either accepting or rejecting three sub-hypotheses. Since two of the three sub-hypotheses were accepted, Main Hypothesis 4 was accepted. **Table 35** provides a summary of these results.

MAIN HYPOTHESIS 4	RESULTS
SUB-HYPOTHESIS 4a: Different roles within System Development Teams seek to improve their negotiation skills.	ACCEPT
SUB-HYPOTHESIS 4b: All Methodologies seek to improve their negotiation skills equally.	REJECT
SUB-HYPOTHESIS 4c: Improvement depends on Conflict.	ACCEPT
MAIN HYPOTHESIS 4: IMPROVEMENT OF NEGOTIATING SKILLS VARIES IN SDLC	**ACCEPT**

Table 35 Summary of the Results for Main Hypothesis 4

More specifically this meant that:

- All roles felt their negotiating skills needed to be improved, and have tried to make use of the negotiating techniques they are familiar with. Further, all roles have tried imitating skills of good negotiators to improve their negotiating skills. Analysts felt they needed to improve their negotiating skills the most. None of the roles have made an active effort to improve their negotiating skills. Analysis, design and support were roles that had a statistically significant effect on Improvement. Schach (1990), Dahlbom and Mathiassen (1993) and Walsham (1993) express that as planners and analysts need to be more strongly equipped with negotiating skills than the other roles, it was expected that these roles would feel the need to improve on their negotiating skills than others.

- Respondents from various methodologies felt their negotiating skills needed to be improved, and they have tried to make use of the negotiating techniques they are familiar with. The

respondents also made an effort at imitating skills of good negotiators to improve their negotiating skills. The methodology adopted reflected no real significance to the importance respondents attach to negotiating, although the JAD methodology ranked the highest on average above the rest of the methodologies. Whitten et al (1994) maintain that the JAD methodology encourages increased participation with all stakeholders of the project and ultimately conflict.

- As greater levels of conflict were experienced, greater efforts at improving negotiating skills were made. Conversely, fewer efforts were made to improve on negotiating abilities, when low levels of conflict were experienced. Dahlbom and Mathiassen (1993) repeatedly stress the importance of participating, negotiating and communicating, in order to resolve conflict. Fisher and Ury (1991) and Dana (1990) further maintain that conflict will persist, unless the importance of negotiating skills is addressed in organisations.

7.2.3.5 Main Hypothesis 5

Importance of Negotiating Skills varies in the SDLC

This hypothesis was established by means of either accepting or rejecting three sub-hypotheses. Since two of the three sub-hypotheses were rejected, Main Hypothesis 5 was rejected. **Table 36** provides a summary of these results.

MAIN HYPOTHESIS 5	RESULTS
SUB-HYPOTHESIS 5a: Different roles within System Development Teams deem it important to have negotiating skills.	REJECT
SUB-HYPOTHESIS 5b: The Importance of negotiating skills varies with methodologies.	REJECT
SUB-HYPOTHESIS 5c: Importance depends on Improvement, Conflict and Skills.	ACCEPT
MAIN HYPOTHESIS 5: IMPORTANCE OF NEGOTIATING SKILLS VARIES IN SDLC	**REJECT**

Table 36 Summary of the Results for Main Hypothesis 5

More specifically the conclusions were drawn such that:

- The importance of having negotiating skills was exceptionally highly rated by all respondents across all the roles, with planners and analysts rating it more than those involved in support. This is primarily due to the fact that planners and analysts are in the forefront of interacting with clients, gathering requirements, analysing them, and justifying which can or cannot be done. These tasks are heavily reliant on interpersonal skills. It therefore makes sense that they will attach more importance to negotiating (Dahlbom and Mathiassen, 1993).

- All methodologies rated the importance to have negotiating skills in their jobs exceptionally highly. The JAD and Prototyping methodologies ranked it more important than RAD and unstructured methodologies. Whitten et al (1994) maintain that some approaches require increased participation, improved relationships between participants, improved gathering of client requirements and ultimately better conflict handling. These reasons suggest a possible explanation why the JAD approach and Prototyping methodology attached greater value and importance to the need for negotiating in the SDLC.

- A significant relationship exists between the Improvement, Conflict and Skills, and the Importance attached to Negotiating skills. All three variables can be used to explain variations in the importance respondents attach to negotiating skills. Although no literature exists to directly support the finding, it makes sense that the greater the conflict experienced, the more efforts made to improve on negotiating skills, as well as the level of negotiating skills, all directly affect the importance that an individual will associate with negotiating within the SDLC.

These findings have significant implications for system development teams and IT managers. These implications will be discussed below.

7.3 IMPLICATIONS OF THE RESEARCH FINDINGS

The findings of the present study have confirmed some of the evidence presented in existing literature and studies, and have also provided a new understanding of the variables that contribute to improved systems delivery. Some of the research findings were entirely original as the research probed into previously unexplored areas. Some of these areas include:

- uncertainty as to which role experiences the greatest amount of conflict and which requires the most negotiating skills
- whether the type of methodology has any effect on the conflict experienced and
- whether single or multi roles or methodologies have any bearing on the conflict experienced.

The research findings thus provided the following new insights:

1. Respondents across all roles experienced low degrees of conflict but those having only one role experienced slightly more conflict than those who were involved in more than one role. Respondents across all methodologies experienced low degrees of conflict but slightly less conflict was experienced in Unstructured Methodologies. Those using only one methodology experienced a slightly higher degree of conflict.

2. All roles generally possessed high levels of negotiating skills. Those involved in one role had a slightly greater strength in negotiating skills than those involved in many roles. Negotiating skills were strong amongst the respondents regardless of the methodology that was adopted. RAD, Prototyping and JAD methodologies ranked the highest on negotiating skills.

3. The Negotiating Framework presented to improve systems delivery results was completely original. The research findings therefore contribute to the understanding that there is a need to instil negotiating skills in the generic SDLC. All roles, all methodologies, those involved in more than one role and those involved in more than one methodology, strongly approved of the Framework. Framework Acceptance could not however be predicted by the Negotiating Skills, or by the degree of conflict experienced. Framework Acceptance could however be predicted by the importance that was attached to negotiating skills.

4. All roles and all methodologies felt their negotiating skills needed to be improved. Analysts felt they needed to improve their negotiating skills the most. Yet none of the roles have made an active effort to improve their negotiating skills. Analysis, design and support were roles that had a statistically significant effect on Improvement. The JAD methodology ranked the highest above the other methodologies for making efforts to improve negotiating skills. Further, greater levels of conflict encouraged greater efforts at improving negotiating skills.

5. The importance of having negotiating skills was exceptionally highly rated by all respondents across all the roles, with planners and analysts rating it more so than those involved in support. All methodologies rated the importance of having negotiating skills in their jobs exceptionally highly. The JAD and Prototyping methodologies ranked it more importantly than RAD and unstructured methodologies. A significant relationship exists between the Improvement, Conflict and Skills, and the Importance attached to Negotiating skills. All three variables can be used to explain variations in the importance respondents attach to negotiating skills.

Research findings that were unexpected and contradictory to the existing body of knowledge include the finding that all roles experienced low levels of conflict in their day-to-day jobs; all roles were equally equipped with negotiating skills, and that analysts did not require the most negotiating skills outside the team.

The supportive findings include:

1. Analysts and planners experienced a slightly higher degree of conflict with clients and within the team. Support roles experienced the least amount of conflict.
2. Greater conflict was experienced amongst respondents who had weaker negotiating capabilities. Similarly, those with stronger negotiating capabilities experienced a lower degree of conflict in their role.
3. The design phase required most negotiating skills within the team.
4. Planners indicated that they required most negotiating skills outside the team

5. Respondents who were more technical in nature were less skilled at negotiating.

7.3.1 Practical Implications of the Research Findings for Organisations

Given the empirical results presented in chapter six, many development teams will need to rethink the manner in which the system development process is managed. Development teams can consider several ways in which to transform the system development process into one that effectively manages conflict, and reduces the unnecessary costs involved with poorly negotiated decisions. Several recommendations follow.

1. Evaluate the Conflict

Conflict is defined in many different ways. Barki and Hartwick (2001) identify interdependence, disagreement and interference as a common theme among most definitions. They define interpersonal conflict as a phenomenon that occurs between interdependent parties as they experience negative emotional reactions to perceived disagreements and interference with the attainment of their goals. Typically project teams involve multiple parties who are interdependent: users depend on the IS Staff or analysts who develop the system, the IS staff depend on the users who evaluate the system developed and both parties depend on top management for providing the necessary resources for the project. Also the parties involved in ISD have divergent interests, opinions and goals. When these parties disagree and act solely with their own interests in mind, their actions interfere with the interests or goals of other parties. As a result of such actions, conflict arises as emotions such as frustration, hostility anger and distrust emerge (Barki and Hartwick, 2001).

Leaders and managers of systems development teams should evaluate the conflict that exists amongst the stakeholders of IS projects. If there is a greater concentration of conflict at certain phases of the SDLC, focus should be shifted to that area. Conflict should also be examined within each role, and between roles. There may be a greater degree of conflict that is experienced between systems analysts and developers, than exists between users and analysts, or developers and users. An understanding of these relationships, and the ease with which decisions are made between these stakeholders, will assist in discovering where the bottlenecks of systems development occur and where to focus attention.

Further, as several parties in the SDLC often undertake several roles, it is important to evaluate the amount of conflict they experience in their day-to-day tasks. Focus in this area could alleviate the conflict that arises within a project. Similarly, some teams adopt a combination of system development methodologies. The conflict that arises amongst these methodologies should be evaluated, and depending on the results, the system development practise should be modified accordingly to abate the levels of conflicts as much as possible. In summary, the degree of conflict should be carefully examined, and appropriate changes should be made to relieve projects of conflict.

2. Evaluate the Costs of Conflict

Du Plessis et al (1990) warn that up to two-thirds of the maintenance costs of a system can be attributed to misconception, not identifying the real needs, or improper conceptual design. Unmanaged employee conflict is perhaps the largest reducible cost in organisations today- and probably the least recognised. It is estimated that over 65% of performance problems result from strained relationships between employees – not from deficits in individual employees' skill or motivation. Thomas and Schmidt (1966) showed that 25% of typical manager's time is spent in resolving conflict. Clearly, this portion of management's salary budget represents no small investment in shielding productive work from the destructive effects of conflict. Financial costs may include costs of a poor decision, loss of skilled employees, restructuring costs (cost in changing roles and positions in order to reduce conflict, as well as cost of adapting to new roles and positions), sabotage, lowered job motivation and lost work time (Dana, 1990).

Leaders and managers of development teams should conduct a thorough study of the costs induced by conflict, and conversely, the benefits derived from successful management of conflict. Costs can be incurred in terms of delayed projects, poor decision making which may result in delayed deliverables, poor teamwork and possibly disgruntled users. Although not all monetary, the costs still point in the direction of a failed systems project. The secret to analysing costs and benefits of investing in negotiating (cost of proposals, cost of accessories, costs of negotiating time, intangible costs (image, reputation) is simply to account for all of the cost and

all of the benefits in securing agreement and compare those estimates with the cost and benefits of alternatives (Johnson, 1993).

3. *Evaluate the Negotiation Skills*

The ideal negotiation leader or participant should be able to:

- say "no" effectively
- inspire confidence
- be ingenious
- be able to "take it"
- be a patient listener
- have a sense of humour
- have an appreciation of the economics of the overall situation and
- be able to organise his thoughts and speak or write with clarity of expression but without being an orator (Morse, 1976).

Hersey (1984) describes the successful negotiator as a leader as leadership is any attempt to influence the behaviour of another individual or group. When taking charge, a leader must have the ability to influence. A thorough evaluation of the development teams' negotiation skills will therefore go a long way in helping IT managers identify where gaps in conflict management lie. All individuals participating in a development team should be measured against a recognised personality survey, which will disguise the variable of interest so as not to prompt favourable responses from the individuals. From there, it will be easy to ascertain which individuals lack skills to handle conflict, and which are poor at defending their ground in decision making. Depending on how severe the conflict experienced is and how debilitating the conflict is in the system project, these individuals can be sent on training courses in order need to improve their negotiating skills. Another alternative is to introduce a facilitator in critical decision-making phases of the project, who will be able to support and mediate for weaker individuals.

Again, it will be necessary to evaluate whether individuals perform better when they are involved in only one role, or more roles, and also when they practice only one methodology or a

combination of methodologies. Depending on these outcomes, it may be helpful to either give more responsibilities to certain individuals, perhaps to afford them a greater opportunity to cross-skill and possibly learn new skills of negotiation. Or, it may be favourable to reduce the roles certain individuals are involved in, so as to afford them the opportunity to focus on their role, and the skills they require to fulfil that role optimally.

4. Employ Negotiating Skills

Chronic, unresolved interpersonal conflicts cause needless stress, and wastefully drain individual vitality and organisational resources. The magnitude of loss in human and financial terms is massive (Dana, 1990). Barki and Hartwick, (2001) have done extensive research on the matter of system failure and agree that Interpersonal Conflict is a neglected topic in Information System Development (ISD). Having said this, it makes sense that individuals who inherently possess these skills should be employed in development teams. Employing such individuals will undoubtedly reduce the costs of training existing team players and will allow the existing team players to learn from the newly employed individuals. It therefore becomes important, when interviewing candidates for system development positions, that negotiating skills are sought after, besides the technical, analysis and programming skills.

5. Implement the Negotiating Framework

A final recommendation is to implement the proposed negotiating framework. It is purely a matter of applying a negotiating process at each phase of the SDLC. Some roles may feel a stronger dependency on the framework than others, depending on the environment they find themselves in and the parties they interact with. A beneficial study will be to evaluate the performance of implementing such a framework in order to quantify the benefits derived there from. The framework should to not be a rigid methodology, but simply a guideline against which team players can monitor themselves. It should be a flexible guideline, which can be modified, and adjusted to suit the teams' requirements.

7.4 LIMITATIONS OF THE PRESENT STUDY

Greater care to eliminate the limitations experienced in the present study, detailed in Section 5.8, should be avoided in case that a similar study is repeated, possibly with a larger sample population. Technical, security and confidentiality constraints experienced in this study can be avoided, and an improved research methodology and data collection techniques can be adopted to improve the response rate.

7.5 RECOMMENDATIONS FOR FUTURE RESEARCH

Following the literature review on negotiating within the systems development process and the findings of the empirical research, the following suggestions and possibilities are recommended for future research.

- *Costs of Failed Information Systems Projects*

Throughout the literature a great deal of emphasis has been placed on the high costs of failed systems projects. A particularly useful study would be to quantify these costs, and in particular, measure the costs of the behavioural organisational issues that are so neglected within the systems development process, such as time taken to resolve conflict, time taken to negotiate to a solution, time wasted on implementing poorly negotiated decisions, and so forth. The present study is at this stage purely theoretical, and it follows that the theories presented should be tested practically in a real environment. Quantifying the costs saved in a systems project by introducing negotiating techniques may result in greater buy-in from organisations.

- *Size of Team*

An aspect that was not taken into consideration in the present study was the size of development teams. This is undoubtedly a contributing factor in the degree of conflict experienced in the systems development process. Smaller sized teams may for instance be more inclined to communicate more effectively, thus reducing conflict to a large extent. They may therefore have improved chances of systems success, compared to large sized teams that may encounter ineffective communication, and ultimately greater conflict.

- *Size of Project*

The Size of the project can also be a contributing factor to the degree of conflict experienced. Perhaps longer projects experience turnover of staff, which could possibly lead to misinformation, lack of communication and ultimately conflict. The results of such a study could vastly contribute to the management of long-term projects.

- *Causes of Conflict Experienced*

Evaluation of the causes of conflicts which arise in the SDLC may provide invaluable insight as to which problem areas to target. The present study omitted to determine the root of the conflicts experienced. Results of such a study could help identify critical bottlenecks which hamper the success of system deliverables.

- *Focus on Roles*

A separate study focussing on individual roles may provide an understanding of the conflicts encountered by each role. A more thorough assessment of the roles' negotiating abilities can be undertaken, as well as a study evaluating which roles conflict with each other the most. This will allow organisations to focus on specific key bottlenecks.

- *Focus on Methodologies*

Methodologies can be focussed on as a separate study entirely. Investigating which methodologies are more susceptible to conflict may allow organisations to modify their methodologies and apply the one that works best. It would be useful to first examine the conflict experienced within the organisations current practices and set methodologies, and then to adjust the methodology so as to relieve the project of unnecessary delays caused by conflicts and poor abilities to manage them.

- *Project Managers and Users*

Two roles that are critical stakeholders in the IS development project are the users and project managers. Failed systems have been known to be attributed to unreasonable user expectations, change in user expectations and resistance to newly developed systems. Poor project management has also been known to contribute to failed systems projects. These two roles have

not been studied in this dissertation. A focus on these roles will provide valuable insight on the frustrations experienced by these parties, the conflicts that they encounter, and what they can do to manage these conflicts. The negotiating framework can also be tested on these groups of people and possibly tailored to suit their requirements.

- *Time Series Analysis*

The study may provide interesting and unexpected results if it were conducted at different time periods. A comparative study, showing the effectiveness of a systems development team before the introduction of negotiating skills to their environment, and the effectiveness after the introduction of negotiating skills and application of the framework.

- *Adjustment of the Framework*

As most respondents were favourable to the proposed negotiating framework, it follows that the framework should be implemented and tested for its viability. Feedback should be gathered, and the framework can thus be improved upon. It can be tested over stages, across various roles within the systems development team, and perhaps also tested in teams using various system development methodologies. The results will undoubtedly improve the proposed framework and will establish the framework's feasibility and effectiveness in a live environment.

7.6 CONCLUSION

There has been considerable research into IS failure types and reasons for frequent IS failures. Failed systems are attributed to resistance to system change, political issues that arise as a result of the system change, poor quality of teamwork and conflict that arises between users and technical staff, analysts, programmers and other IS professionals. When these parties disagree and act solely with their own interests in mind, their actions interfere with the interests or goals of other parties. As a result of such actions, conflict emerges (Barki and Hartwick, 2001).

While deemed important, few studies have examined interpersonal conflict and the impact it has on project outcomes. Even fewer studies have examined what skills are required to manage this conflict (Carroll, 1982). The present research aimed to tackle these issues, in order to provide better methods of systems analysis and design and to ensure appropriate, feasible and acceptable

programs and applications. In this chapter the results of the research were summarised. In addition, the implications of the research were discussed, followed by suggestions for future research. There are several options available to system development teams and managers to improve on current practices so as to yield more effective system projects. As organisational behavioural techniques such as negotiating increases the probability of system success (Hirschheim and Klein, 1989), it becomes viable to consider including negotiating practices in the SDLC.

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APPENDICES