Chapter 1   Background to the study

1.1   Preface

This section 'sets the scene' by introducing the reader to the Information and Communication Technology (ICT) industry, the professionals employed in this industry and the environment in which this research was conducted.   This section also refers to a previous research project, which led to the initiation of this follow-up research. The rationale and motivation for conducting this research are discussed at the end of this chapter.

1.1.1   The importance of ICT in organisations

Knowledge and Information Technology have never been more important in business than it is today, as was found by many research projects done during the past five to ten years (Senn, 1995; Schenk, 1998; Gallivan,1995; Black, 1997; Benamati, 1998; Cheney, 1990; Nielsen,1999).   During the 'information age' (1980's and 1990's) businesses have come to recognise that information is a valuable resource separate from the technology that stores, retrieves and processes it. This has lead towards conscious management of information as a valuable corporate asset. At the close of the twentieth century the economies of the world started moving beyond the information age and into the 'knowledge age' (Schenk, 1998; Gallivan, 1995; Ambrose, 1998; Head, 1999). As Bergeron comments: "In this era of information on demand, knowledge and ideas have become commercially viable commodities" (Bergeron, 1999). The term "Knowledge management" has entered the corporate and research language and became a widely used term in the corporate world.

Organisations of the 21st century are expected to be increasingly dependent on knowledge and information technology, because the evolution into a knowledge society has increased the importance of the roles of information technology and computer personnel in providing organisational knowledge.   As we approach the new millennium, it is

difficult to imagine a business today that does not in some way rely on IT as a foundation for its success (Trauth, 1993).   A Massachusetts Institute of Technology study *The management in the 1990s research Program* stated that information technology is "ubiquitous" while Benamati and Lederer (1998) calls it "the lifeblood of the organisation". According to Lee (1995), computers today "not only provide the backbone of information processing for organisations, they are also changing the fundamental ways in which organisations operate". On all levels IT has become a crucial tool - without it companies cannot advance.   According to Benamati (1998) Information Technology has "increased in capability and plunged in cost" and new products emerge rapidly. The corporate culture is also more aware and accepting of IT. This has put IT into a strategic role in many organisations.

Organizations have undergone significant changes over the past several decades. The changes in the Knowledge and Information Technology industry have made an impact on every sector of the business and corporate world. Very few professions have seen more changes as in the field of Information Systems and Information Technology (Lee *et al.*, 1995; Benamati, 1998; Harvey *et al*, 1997)

In recent years there was a shift from the traditional organisation where the IS/IT activities were centralised, toward a more decentralized, end-user focused business orientation. Aligning information system solutions with business goals and needs, as well as building the infrastructure for technological integration, became the top priorities. According to Jim Senn (1995) corporate leaders started expressing severe doubts about the benefits their firms are getting from huge investments in Information and Communication Technology (ICT). However, in most instances the doubts are not focused on the technology, but rather are aimed at the IS/IT professional. According to Senn "the principal cause of the frustration is the inability of skilled professionals to satisfy the never-ending demands from line managers and organisation staff."

1.1.2 The changing IT career

The career path of the successful IS/IT worker is very topical and seems to be different from five years ago.   In the past the typical career path of an IS/IT professional was linear : from programmer to systems analyst to project manager to IS/IT manager. In a sense the lower level IS/IT jobs are rapidly disappearing and the requirements for IS/IT professionals are becoming more demanding in multiple dimensions, particularly in the areas of business functional knowledge, interpersonal– and management skills. These demands will likely lead to different career tracks with differing emphasis on the multi-dimensional knowledge and skills for IS/IT professionals.   Lash (1995) supports this by saying that the changes in corporate computing brought about by factors such as innovations in technology, end-user computing, standardised software packages, increased use of telecommunications and outsourcing have created many new career paths.

Due to the new role of knowledge and information technology, a new organisational structure has been advocated by Wynekoop (1999), suggesting a movement from previous 'task orientation' to a 'role orientation'.   This means that IS/IT personnel must assume the role of internal consultants for business projects in order to work effectively with end users. Lee (1995) suggests that the orientation of the IS/IT function must move away from being the proprietor of information systems and resources, toward being a service provider to business end users. This places new demands on the IS/IT professional.

1.1.3 Changing demands on IT professionals

Changes in the career path of IS/IT employees obviously causes changes in the desired knowledge and skills of IS/IT workers. The range of knowledge and skills that must be available to a company has expanded and diversified. The IT sector is fast-paced, tough and competitive. No literature, contradicting this statement, could be found. Employers are looking for potential employees who display a combination of knowledge, agility, innovation and leadership. Along with a solid skills and academic base, a willingness to

learn on the job and to upgrade skills is important. Innovation is vital in IT environments, so people who can constantly innovate and look at old problems in new ways are needed. Much of IT work is project-based, and people are thus also needed who can lead teams and work effectively as team members.

From many research projects completed over the past five years, the knowledge and skills necessary to ensure a successful career in the ICT field include technical skills, as well as the personal attributes and social skills needed in a well-rounded person (McLean,1996; Senn,1995; Greenwood,1986;Lee,1995; Nord, 1998;Lash,1995; McGuire,1998; Becker,1997;Cheney,1990; Harvey *et al*,1992; Wynekoop,1999; Gramignoli,1999; Richens,1998). We can therefore say that the ICT professional is almost 'pulled in opposite directions'. One is toward a more business and human orientation. The other is toward the technical skills required to maintain a company's technology infrastructure. Caruso (1998) calls such a person a "rare executive who can easily handle both the technical and people sides of business" and that they often have problems "adjusting to the grey areas that go along with working with people." McLean comments: "Somewhere in the process of career progression the high achieving IS professional needs to complete a metamorphosis from technical expert to technical and people expert." (McLean,1996)

From his study on organisational change and students' attributes, Professor Harvey (1997) suggests that the employee of the future will have to develop a profile of attributes and abilities to enable them to work in the organisation of the future. Nord (1998) emphasises that, with the widespread use of computers came a new career path that can be characterised as some type of end user support specialist."   In the study done by Nielsen (1999)*.* he concluded that the commonly held view of IT/IS skills as being focused on technical systems is inadequate. According to him IT/IS skills should be studied within the developing social context of IT production and use. The research indicated that traditional, technology oriented skills may no longer be appropriate for information systems development. McGuire (1993) quotes Olson from his book Exploiting chaos : Cashing in on the realities of software development in saying: "software development is characterised by a chaotic approach where there's always

another way. You should achieve a fit between the discipline, the problem, the people and the organisation." Unfortunately, according to Nielsen, the importance of non-technical skills and personal attributes seem to be overshadowed by the continuously expanding need for specific technical IT/IS skills (McGuire, 1998) .

Sawyer (1998) concluded from his study on corporate IS/IT skills needs that IS/IT professionals need more than technical skills. (Lee, 1995) says that ICT is no longer the domain of " thick spectacled computer nerds wearing mismatched, ill-fitting clothes." Technologies are changing quickly, making prior technology competencies obsolete. IS/IT employees will therefore have to rely more on learning and less on what they already know. According to Gallivan (1995) the new IS/IT professional will be a lifelong learner for whom "intellectual curiosity" and "a desire for learning and challenge" will be important characteristics. He states: "we need the right balance of autonomy and sociability, individuality and adaptability. Learning to learn has to be one of the most important objectives of education, as the half-life of acquired knowledge is shrinking further and further."

The recent changes in Knowledge and Information Technologies, applications and personnel therefore require that the skills for IS/IT professionals be reconsidered. Traditionally, technical knowledge and skills have been regarded as overwhelmingly important for the successful IS/IT worker. Labour market developments have important consequences for the professional life of IS/IT workers - communication and interaction have also become key elements in most jobs. According to many employers, without effective social and communicative skills even the most sophisticated technical knowledge and skills prove ineffective. The ICT industry of today needs a different type of worker than was traditionally the case.

1.1.4   A skills profile for IS/IT professionals

When determining the profile of the IS/IT worker, it is important that all aspects of a profile are addressed.   To distinguish between knowledge, skills and abilities the definitions of Cheney et al (1990) can be used. According to Cheney:

Knowledge refers to the content of technical information needed to perform adequately in a job and is normally obtained through formal education, on-the-job training and information media such as manuals.

Skills are the specific psychomotor processes necessary to meet the current requirements of a specific job. They are manifested through behaviours such as conducting an effective interview, writing a well-structured COBOL program, or developing a structured system specification. Skills also include the facility to select from among a repertoire of possible actions those that are most appropriate for a particular situation.

Abilities refer to the cognitive factors representing present capabilities or achievement levels.

In research projects done throughout the world, the profiles of IT/IS workers previously only addressed the technical and social/communicative skills of workers. In a previous study done by Wynekoop & Walz (1999) the perceptions of IT personnel and end users concerning the characteristics of high performing IT personnel were compared. This study has recently been repeated. The purpose was to extend previous research, which considered only skills and knowledge requirements of IT personnel to also include personality characteristics ('attributes'). Skills and knowledge, along with personality traits should be examined to arrive at the full picture of a professional profile.

1.1.5   Previous research leading to this study

Academic institutions throughout the world have often been criticised for delivering a product to the industry that is not fit for purpose (Trauth, 1993; Mawhinney, 1995; Mawhinney, 1999). Often, industry is not asked what should be included in the ICT curriculum and higher education can be faulted for teaching "obsolete technologies" and "irrelevant programming languages".   Trauth *et al* (1993) refers to an "expectation gap" resulting in companies having to retrain graduates from higher education institutions. To close the gap between the expectations of the ICT industry and what higher education delivers, they suggest that industry and tertiary educational institutions must work

together and that companies need to send consistent messages to Universities and Technikons about their expectations.

As a result of this expectation gap, a research process was initiated in 1999 by the researcher at the department of Computer Technology of Technikon Pretoria in Gauteng, South Africa (this institution has recently been transformed to the Tshwane University of Technology). The purpose of the research process was to bridge the gap between the training we provide to Information Technology (IT) learners and the needs of the Information and Communication Technology (ICT) industry - the major employers of our learners. The first phase of the process, to determine the needs of the ICT industry in our region, was completed during 1999 and 2000.   The chosen methodology for that project was action research, which required the active involvement and commitment of our academic staff and the ICT industry in our region. A clear picture of the industry needs was obtained through a formal 'needs-analysis program'. Major issues faced by ICT professionals were also determined. To ensure the relevance of ICT training, industry requirements were related to the academic preparation of future ICT professionals.

An extensive literature study was done on the ICT industry, to determine the various areas of specialisation in the ICT field. Subsequently a questionnaire was distributed to determine other possible areas of specialisation. Personal interviews were conducted to ascertain the need for specialised training at the Technikon and to determine the most important fields of specialisation for companies with ICT activities in our region. Potential employers of our learners were selected for the study, as well as members of the Advisory Committees, employers of our learners during their Industry Exposure period, hardware- and software suppliers and donors. The participants in the interviews were all leaders in the ICT field, who play strategic roles within their companies. Typically, the senior manager (probably the IT manager) and one or more line managers working in the company participated in the interviews.   A total of 23 IT managers completed and returned the questionnaires and personal interviews were conducted with a total of 30 managers.

During the research it became clear that the three or four years spent at an academic institution was not enough to teach learners enough about all the areas of the ICT field. Industry representatives suggested that our learners specialise during their diploma or degree program. The research also confirmed the importance of in-depth teaching and hands-on experience. The most important focus areas and contents of such specialisation degrees were determined and eleven possible specialisation areas were identified. Five of these fields received 86% of the total number of votes and were therefore clearly more important than the others – these fields are mentioned below. During 2001, after completing this part of the research, the entire qualification structure of Technikon Pretoria was redesigned. All other Technikons in the country also implemented this structure. The following five BTech (Information Technology) specialisation degrees were designed for Technikon Pretoria:

Business Applications

The business applications specialist field was supported very strongly. The qualification includes thorough business education, a solid IT background and a personal development focus. Typical career options for these learners are business analysis, systems analysis and project management. The training takes the business analyst role beyond the ability to define business requirements and translate it into systems terms, but also teaches the learners how to quantify business benefit and be able to look for continuous improvement.

Software Development

Learners learn to design and produce software products and systems to meet specified needs, work reliably and be cost-effective in their production and maintenance. An overwhelming majority of the participants regarded programming as an essential skill, regardless of the area of the ICT industry where the person works.

Communication Networks

Learners examine issues involved in the design, implementation and management of local area networks and their interconnections locally and through wide area networks.

Web Applications and -development

The extent, to which the Internet has been introduced into the world of work, has necessitated the separation of a career in web page design, web application development and webmaster.

Intelligent Industrial Systems

This area focuses on process control and the use of computers in industrial appliances. One of the major areas of interest is robotics.

The results of the research project had a dramatic impact on the qualifications offered by the department of Computer Technology, as well as its future strategies and structure. In 2003 a new Faculty of Information and Communications Technology (ICT) was launched with separate departments responsible for managing each of these specialisation areas. One of them was the department of Business Applications and IT Management, responsible for the BTech:IT degree in Business Applications. The students studying in this department are prepared for managing the interface between the IT function and the rest of the business. As head of this Department, the researcher is particularly interested in the business-IT relationships. The framework provided by this research project will help to identify the important aspects to be covered in the degree program.

Many changes and improvements were made to the teaching programs. The first year of study is the same for all ICT learners, followed by the specialised training. Industry exposure and professional development remains an important part of the qualifications. The non-technical skills and personal attributes required of ICT employees (and therefore learners) as determined by the researcher were included in the training programs. Although the traditional role of the Technikon was to provide a new supply of learners with technical skills to the labour market, it is currently also involved with professional training with a strong focus on non-technical skills.

1.2   The IT/Business interface

1.2.1   The importance of relationships

The importance of healthy interpersonal relationships is widely recognised as a key factor in improving organisational performance. The success of an organisation's quality, customer retention and productivity depend on effective relationships (Cormack; Stewart; Manthey, 1994) . Relationships occur between employees of an organisation (**internal** relationships) and between employees and external stakeholders (**external** relationships). The nature of these relationships can be influenced by factors such as personality types, culture, position within the organisation emotional well being of the organisation, leadership, et cetera.

1.2.2   The failure rate of IS/IT systems

Relationship problems occur when IT professionals have to deliver products and services in a strategic vacuum at a large cost reduction and business line managers question the high costs of IT and its failure to focus on the critical business needs. A number of research projects have been completed since 1995, to quantify the success rate of IT projects. The statistics of these reports can be found online at www.it-cortex.com/stat_failure_site.htm. Research done by the Standish Group (1995) indicated that, of 8000 IT projects

➢ 16.2% were on time, on budget with full functionality
➢ 52.7% were over budget, time and had fewer functions
➢ 31.1% were cancelled (Mann, 2002)

The group estimated that almost 80 000 projects were cancelled in 1995 in the USA. A study completed under the auspices of the Organisational Aspects Special Interest Group (OASIG) in the UK, estimated the IT project success rate around 20-30% and indicated that 7 out of 10 IT projects "fail" in some respect. Over 61% of the projects analysed by the KPMG Canada Survey in 1997 were deemed to have failed. More than

three quarters did not adhere to their schedules and more than half exceeded their budgets by a substantial margin.

Things haven't really improved since. The Conference Board Survey of 2001 found that 34% of their respondents were "very satisfied" with Enterprise Resource Planning (ERP) implementations, 58% were "somewhat satisfied" and 8% were unhappy with what they got. Those that did achieve benefits took six months longer than planned and were at lest 25% over budget. Support costs for the year following the implementation were underestimated by and average of 25%.

In 2001 Robbins-Gioia, a provider of management consulting services in Virginia studied the perceptions of enterprises of the success of ERP implementations. 51% of the respondents viewed their ERP implementations as unsuccessful, 46% noted that their organisation did not understand how to use the system to improve the way they do business. An interesting comment made on the Robins-Gioia survey was that project failure is not defined by objective criteria but by the perception of the respondents. Such a perception integrates multiple aspects.

Stewart (1999) is of the opinion that the perceptions of leadership held by the business and IT managers differ and refers to the CEO-CIO relationship as "a constraint for effective exploitation of IT in a business".   On the other hand employees in functional areas of the business (called 'users') often resist technology because of decreasing self-confidence in their ability to learn new skills, difficulty in adapting to new systems and fear of displacement. This leads to decreasing productivity, employee turnover, low morale and indecisiveness (Bradshaw-Lynn, 1999). Katz (1995) suggests that the negative perceptions can be changed. Instead of taking the blame for "being part of the problem, not the solution" and "not understanding the business", IT professionals should become part of a reengineering effort and focus on "forging new working relationships and repairing old ones". Business considerations, not technical ones, drive investments in IT. Business expects that IT professionals solve business problems for them and that they (IT) are willing to be held accountable for whether or not the solutions deliver as promised.

1.2.3   Strategic alignment

The need for strategic alignment between IT and business has been a topic of many research projects in the past. Important researchers in this field were Henderson(1998), Henderson and Venkatraman (1991), Hirscheim (2001), Meador (1999) and Luftman (2001). Other researchers, who influenced thoughts on strategic alignment, were Keen, Sauer and Yetton, Weil and Broadbent, Morton and Michael. These researchers and practitioners have studied and described strategic alignment as a means for ensuring that IT management actions are consistent with the business strategy, ensuring that the "capabilities, structures and processes of the IT organisation reflect and enable the business capabilities, structures and processes." A strategic alignment model was developed in the 1980's and improved through the years. As the model was developed at a time when the business environment was more stable, it positions IT merely for a supporting role in business strategy and limits the possibility of realising competitive agility through creative and innovative combinations of "strategic levers" such as information technologies, knowledge, processes, assets, competencies and relationships.

Bridging the gap between IT units and business units has traditionally been a matter of 'strategic alignment': set the business strategy and then determine how technology can help. For decades, IT strategy has therefore followed and aligned with business strategy. Aligning information systems solutions with business goals and needs has become top priority for all IT activities and a concern of business executives and IT managers alike.

Strategic alignment therefore focuses on the activities that management performs to achieve cohesive goals across the IT and other functional organisations. It addresses how IT is in harmony with the business and how the business could be in harmony with IT, on a *strategic* level. Not much research has been done to indicate the importance of alignment on lower levels – within groups and individual jobs. Furthermore, most studies have focused on the business- and technical aspects of alignment, ignoring the human element. Any strategy has to be implemented before it means anything. This emphasises the importance of healthy interpersonal relationships between, amongst

others, manager/IT employee, IT professional/client, outsourcing partners and project teams.

1.2.4   Business-IT alignment is not enough anymore

During the past two decades, there has been a shift from the traditional organisation where the IT activities were centralised, toward a more decentralized, end-user focused business orientation. Business considerations, not technical ones, drive investments in IT. Business expects that IT professionals solve business problems for them and that they are willing to be held accountable for whether or not the solutions deliver as promised.

Traditional alignment approaches invite risk and leaves opportunities untapped – it is therefore not enough to ensure successful IT implementations. A new model, one of "cyclic, iterative co-development of business and IT strategy is proposed (Dickson,2000). Smaczny (2001) is of the opinion that "owing to major market changes, the strategic alignment model no longer provides companies with the much-needed answers" and "a strategy approach that allows for handling a chaos environment and rapid response is needed". According to Smaczny, the problem is that the alignment concept is about a sequential development of strategies and a sequential operationalisation. A lack of IT agility and responsiveness can create a competitive disadvantage. The sequential model is simply too slow. Alignment evolves into a relationship where the IT and other functions adapt their strategies together. According to Luftman (2002) alignment requires strong relationships, strong leadership, trust and effective communication. This is the task of people in relationship management roles.

Frank F. Britt (2002), a Managing Principal within the IBM Strategy and Change Consulting Organisation, supports this view by saying that "long-held beliefs about the relationship between business and IT – while rooted in truth – do not convey a completely accurate view". Competition is more intense than ever and executives are searching for an edge. They know technology can make a difference, but they're not sure

how. Many of the long-held beliefs about the relationship between business and IT are not complete and accurate. Britt refers to these as "half-truths":

1. As lines of business begin to drive technology investment, the IT department plays a lesser role.
2. The business should keep IT baseline costs as low as possible.
3. In tough times IT should bear its share of budget cuts.
4. Our technology strategy must be aligned with our business strategy.

The first three "half-truths" emphasise the importance of IT in modern business. It is the fourth "half-truth" that interests us, as it coincides with the opinion of Smaczny that the alignment model is not relevant anymore.

1.2.5   Fusion

Enterprises cannot afford to keep their business and technology strategies separate, but traditional alignment is not enough. Even if the business and IT strategies are developed in parallel, there is room for "disconnects" that cost companies millions each year in unrealised value. Business and IT strategies should therefore not be developed in parallel, but "in concert" with one another. Rather than settle for alignment, companies should aim for "fusion". The term IT/Business 'strategy fusion' is also used in literature (Luftman, 2000). According to the Oxford dictionary fusion means:

fusion\'fyü-zh : 1.A merging of divorced, distinct, or separate elements into a unified whole. 2. A union of particles that result in the release of enormous quantities of energy.

Britt (2002) says that positive energy has to be generated, not just friction. He found that "fostering a truly collaborative partnership between business and IT requires a different mindset – for the IT organisation as well as the business. Business and IT leaders must feel comfortable crossing over into one another's domain. IT leaders need to develop a more participative style, fuelled by influence, persuasion and negotiation.   In return, business must treat IT as a valued advisor and a strategic contributor and a capability-

enhancing team that can help drive structural cost reductions, improve top-line growth and create lasting advantage."

Alignment evolves into a fusion ("relationship") where IS/IT and other functions adapt their strategies together – i.e. a "higher degree of strategic alignment". The newer approaches emphasise the building of successful, ongoing relationships between IT and business units toward a 'learning community' where the user can find the right information for a specific need and the context for meaningful relationships is provided. The transformation from alignment to fusion needs to be made on a wider scale than strategy alone. Fusion has to be created on the tactical and operational levels and amongst all employees in the organisation. No organisation can exist unless there is a strong alignment or common purpose among its people. The classic example is a rowing boat: it's impossible to go anywhere if people are rowing in different directions. Alignment is therefore the process by which people connect and add their energies to each other in achieving a goal. Fusion is created when strategies are communicated to all levels of the organisation (strategic, tactical and operational).

Business and IT, in terms of both organisation and strategy, are unified and their fusion can create greater customer value and profitability.   In this sense, fusion is called a catalyst for value creation". According to Frank F. Britt (2002) of IBM, the following is needed to actually fuse business and technology:

1. Equal involvement in strategy and business design

   The technology strategy should no longer be subordinate and developed after the business strategy is complete.

2. Harmonisation, not standardisation

   To create the most value, fusion between IT and business must occur at multiple levels – both enterprise-wide and within each market.

3. Measures that matter

   IT should be measured with a balanced scorecard, including measures such as customer retention and market share. Business and IT executives should learn to "speak the same language" and the energy generated by fusion should be channelled in the right direction.

4. A businesslike approach to IT investment

   Business executives must be able to translate project objectives into real financial benefits and portfolio management should be ongoing.

5. Joint ownership of outcomes

   IT organisations should be business-driven; they should work closely with business departments to understand their requirements and deliver requested functionality.

Cook and Hunsaker (2001) refer to organisational culture as complementary to rational managerial tools. Culture epitomises the expressive character of organisations; it is communicated through symbolism, feelings and the meaning behind language, behaviours and physical settings. Both the rational tools and the expressive cultural elements influence how people behave in organisations – what gets done, how it gets done, by whom, how often and with what consequences. The influence of these expressive elements on the business-IT relationship has to be determined. A 'fusion culture' is needed in organisations today, based on effective interpersonal relationships. Such a culture needs to be created and nurtured, meaning that the potential of human beings is respected. This culture will demand excellence, growth and commitment. But, it will treat people as people, full of potential, whose spirits are vital to success. This culture will be evident in the relationship between business and IT departments.

1.2.6   Management and fusion

Managers play an important part in creating fusion in organisations. Wang (1995) suggests that to eliminate the "disconnect between information technology and business, organisations should follow five steps:

1. Select the right chief information officer.
2. Decentralise and distribute information technology resources.
3. Convert information technology to a profit centre.
4. Advance end-user computing.
5. Promote evolution instead of revolution.

Whether one agrees with all these steps or not, one thing is clear: Selecting the right manager/leader is one of the most important steps in creating relationships in organisations. It determines competitive advantage or disadvantage and the management challenge is to make sure that business processes, people and technology are meshed. The role of the IT executive in the fusion process will require a new approach to the deployment of technology and the management of technical people.

What will such a CIO look like? Wang (1995) says that a Chief Information Officer should be appointed by the Chief Executive Officer (not the Chief Financial Officer) and only if he/she is "CEO material". The transformation to end the disconnect will not be easy, and there are no "secret formulas, magic potions and shortcuts" (Wang, 1995). The transformation will require all participants to revise the way the deal with one another and with the outside world. Eliminating the "disconnect" therefore requires a change of attitude, by changing from an *organisational change agent* to an o*rganisational development agent*.   Organisational development includes planned change through diagnosis and organisational problem solving. Wang (1995) emphasises this in his own way by saying that "eliminating disconnect is not by itself a goal worth fighting for" and that efforts are not be measured by what is erased, but by what is built. This is where the *development* part of Organisational Development becomes relevant. Creating fusion in the IT/Business relationship would therefore require a change in the attitude of the IT executive from a technocrat and technical manager to a people manager who aims to bring the best out of his employees. Such a manager would focus on integrating organisational development- and technological interventions towards optimal organisational effectiveness.

1.3   Rationale and motivation for the research

The importance of training and education in producing IT professionals, is worded by Harvey and others (1998) in saying that the output of Education and Training Systems (in particular Higher Education institutions) is the "prime determinant of a country's level of industrial productivity and hence competitiveness".   One of Higher Education's purposes is to prepare students well for working life.   For South Africa to play a role in the world

of technology and computing, it is essential that higher education produce technologically literate young people - who are equipped to become the capable workforce that the country needs – but also well-rounded individuals who will play an important role in bringing business and IT together.   Employers and their representatives consistently say that, to succeed at work, people must develop a range of personal and intellectual attributes beyond those traditionally made explicit in study programmes. The nature and extent of the knowledge, abilities and skills that graduates need, have to be identified and developed at Higher Education Institutions. (Harvey *et a.l*,1997) universities in South Africa are being forced to regularly re-examine the effectiveness of their programmes and services. The fact that the Business-IT gap still exists today means that there is something missing from the training of IT professionals.

With the pace of technological change today, it is nearly impossible to keep the IS curricula current. According to a study done by Ernst & Young in 1994 and quoted by Trower of Baylor University (2001), the half-life of technical knowledge is approximately six months. This presents a unique challenge to higher education institutions, who must develop and maintain a curriculum that balances theory with enough technical knowledge, and yet be well grounded in IS concepts that they can continue to develop as technology changes. Tertiary education institutions should aim to identify trends in the marketplace soon enough to allow lecturers time to respond in the courses. This is done through analysis of job advertisements and regular contact with industry through

- ➢ research projects to determine the needs of industry.
- ➢ visiting students during their Industrial Exposure period.
- ➢ guest lecturers.
- ➢ external moderators from industry, who evaluate the quality of the teaching and assessment.

In the climate of change, graduates in South Africa therefore have to be aware of the changing nature of jobs and the required profile of employees in the different fields of ICT. The following section will emphasise the importance of keeping clients in Higher Education informed about the training and career options in the ICT discipline, especially

in the field of Business Applications and IT management. It will include a definition of Informing Science, a discussion of the importance of a higher education/industry partnership in preparing learners for a career in the ICT industry and a description of the research process aimed at improving information flow between the institution and its clients.

As mentioned before, the career path of the successful IT worker is changing rapidly and is very different from five years ago. It is crucial for learners to be informed about the different career options in the ICT field and base their career choice upon this information. Previously, many of the changes to instructional offerings at Tshwane University of Technology (TUT) have been based on the opinions of the Advisory Committees and academic staff. Advisory boards comprise respected industry representatives, who have practical experience in the relevant area(s) of the ICT field. Meetings are held three to four times per year to discuss the course structure and contents and determine its relevance. Where needed, new products and methodologies are introduced into the course contents, often with the help of the committee members.

Despite the valuable feedback from the advisory board members, they do not represent the entire spectrum of companies with an ICT focus and they sometimes tend to give a one-sided view of the real needs of the total ICT industry. To effectively manage the academic programs, higher education institutions must also have access to alternative sources of information to verify that the points of view exposed by the advisory committee represent reliable data on which to make changes or plan courses of action.   It is thus necessary to do an in-depth investigation (formal research) into the needs of a representative number of ICT companies and to create and maintain close links with the ICT industry. There is no doubt that the days of the "take what you get" approach are counted.

Research is therefore continually needed on a wider scale. Furthermore, conducting personal interviews with participants will alleviate many practical problems of scheduling advisory committee meetings to suit everybody. A research process was initiated to continually and systematically examine the fit between the skills and knowledge

possessed by ICT graduates and the requirements of the ICT industry. When research on the required profile of ICT workers is done, the knowledge, skills and attributes are addressed (Cheney *et al*, 1990).

It is the responsibility of an educational institution, to "extract" this information from the industry, rather than expecting industry to "feed" them the information. The purpose of the research process is to follow a formal procedure to determine what is expected of the IT worker and then adapt the instructional offerings to address the necessary skills, knowledge and attributes. To understand how the profession of the IT worker has changed, the changing technologies, the changing business environment and the changing role of ICT in organisations are investigated – all factors driving the change in the profile of the ICT worker. This information is conveyed back to the learners, their parents, employees and other stakeholders.

Research to determine the profile of the ICT industry and ICT professionals benefit the academic institution in many ways. It enables us to present up to date instructional offerings and, because the best and most recent information is available to the academic staff, their lecturing abilities improve.   Close contact with industry leads to mutual understanding, -support and valuable partnerships with the possibility of cooperative research between industry, lecturers and learners.   Placement of learners in industry, with the purpose of gaining industry exposure, is facilitated. This process is simplified when a trust relationship exists between industry and higher education.

The department of Business Applications and IT management at Tshwane University of Technology is responsible for producing employees with strong IT-, business- and people skills, who could interface between business units and the IS/IT function. An important outcome of the previously described research was an awareness of the importance of doing regular needs analysis projects. As head of the department of Business Applications and IT management the researcher identified a need for further research. The focus would be on the business-IT interface and the specific profile of skills, knowledge and attributes required of employees who have to bridge the gap (create fusion) between the two. Such a profile would be used to improve the four-year BTech

IT (Business Applications) degree course and will be updated from time to time. The results of this research will be shared with prospective and current learners, as well as faculty members within the Department. The impact on the curricula and course contents is not addressed in detail in this document.

1.4   Problem statement

Most organisations have limited knowledge of what contributes to the success or failure of information technology projects. Apparently there is no sole source of IT project failure. The ICT industry does not always deliver what business expects of them. Although computer scientists are very capable of building systems, they often have difficulties building systems that meet end user's needs. In literature this is referred to as the "IT/Business gap" or the "expectation gap". Business experts have a negative perception of the IS/IT function and there is an adverse relationship between IS and business. In most instances the lack of confidence in IT is not focused on the technology, but aimed at the IT professional. Research therefore has to move towards the human element of IT and the cultural differences between business and IT groups. The absence of an effective relationship can limit the successful use of IT in organizations, a clear indication of non-fusion (lack of "union"). It is therefore important that organisations know what the criteria for fusion are.

In summary, there is a bad relationship between business and IT because IT projects fail to deliver a solution to the real business need.   But also, in many cases, the IT projects fail because there is a bad relationship between business and IT - the business sections regard IT professionals as "weird", "part of the problem", et cetera. It seems that we have the proverbial "chicken-and-egg situation" where the one is the cause of the other and nobody knows which one comes first.

As discussed in the previous section, Tshwane University of Technology (TUT) (through the department of Business Applications and IT Management) is responsible for developing role-players in the business-IT interface. This includes analysts, future IT managers and project managers. Their responsibilities will be to create fusion between

business and IT. Business systems analysts who act as a liaison between business people with a business problem and technology people who know how to create automated solutions are hard to come by. These employees are responsible for the business- and technical analysis and design of the solution and to manage the human behaviour issues arising from the relationship. Furthermore, there is a need for hybrid IT executives who understand the need for technology and also have the people skills to be effective leaders and develop the potential of the organisation.   It is therefore necessary to clarify the roles, responsibilities and professional profile of these employees.

Many organisations employ people called business analysts, whose role was designed and positioned to bridge the gap between IT and the business client (i.e. to "create fusion"). The role of the business analyst is complementary to that of the systems analyst – and sometimes combined with the role of systems analyst - who is responsible for the IT system analysis. A wide range of skills and knowledge requirements seems to be necessary to be an analyst. The problem is that there doesn't seem to be any standard definition of what business analysts and systems analysts are and what they should be doing, although every organisation seems to have them. In the ICT industry the titles business analyst, systems analyst, business systems analyst (or business/systems analyst), business architect and relationship manager are often used interchangeably. Other titles found in literature for the relationship positions are relationship manager, client service manager, customer advocate, account relationship manager, IT manager to IT-user liaison manager, Requirements engineer, Systems engineer and Project manager/program manager. It seems that they have almost the same role in the organisation and the profile of these positions should be determined.

Another problem in the business-IT interface is that many IT executives are still unaware of the many human organisational factors that can be attributed to project failure. They often fail to take a holistic perspective on IT related organisational change and – development. They also find it difficult to convince their superiors of the merit that lies in the application of information systems in their organisation. However, the most challenging issues in IT today are not about technology or systems; nor are they about the use of information. They are about the styles and behaviours of many IT professionals

(Coghlan, 1996). The modern organisation is a highly political environment and IT people need to be equipped to deal with the situations that face them.   This will make the IT professionals more credible and influential – it will therefore ensure that the organisation more effectively exploits IT for business advantage. For instance, one of the issues that dominate the IT executive's agenda is people – to develop the right people skills for the future, retain the right people and re-skill IT staff.

1.5   Purpose of the study

The nature of the relationship between IT and business in organisations translates to a gap between the two - there is not a high degree of fusion. The primary purpose of this research project is to investigate the business-IT interface and lay the foundation towards a framework for creating fusion between business and the IT function within organisations. Such a framework will contain the reasons for relationship problems and IT project failure, the elements of fusion and the responsibilities of the major role-players in creating fusion. The framework could be used as a basis for defining, creating and delivering a well-rounded employee to serve their ICT needs of industry and work towards the uplifting of the country as a whole. In summary, the purpose of the research project was therefore to

1. determine a complete set of reasons for business-IT relationship problems.
2. describe the criteria for fusion between business and the IT function.
3. identify and investigate the role players in creating such fusion.

The business- and/or systems analyst was identified as a major role player due to their responsibility for extracting and defining user requirements and managing the business-IT relationship. A preliminary investigation into the world of analysts in organisations indicated that there is a high degree of confusion and uncertainty about their titles, roles and responsibilities. Before their role in creating fusion can be designed, it is important to understand the current ("as is") situation faced by people doing business analysis, systems analysis, or the combination of the two. The purpose of this part of the research is therefore to investigate the perceptions and opinions of analysts regarding their roles and responsibilities and the skills, knowledge and attributes they require in their jobs as

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analysts. From the knowledge, skills and personal attributes a professional profile of people responsible for analysis is derived. The design of an analyst role for creating business-IT fusion in an organisation and the Body of Knowledge required to do so, will be the focus of follow-up research.

Another role-player that was identified by the investigation into the business-IT interface, is the IT manager/CIO or whatever other title they can be called - collectively referred to as the 'IT executive'. A preliminary study of the world of the IT executive and the major focus on the people issues they face in managing the business-IT relationship led the researcher to believe that the IT executive has a very important organisational development responsibility within the organisation as a whole and specifically in the IT function. The purpose of this part of the framework is to investigate the different Organisational Development (OD) responsibilities and how they pertain to the IT executive specifically. No scientific evidence of previous research on the OD role of IT executives could be found. The importance of such a role in creating business-IT fusion will be investigated.

Another role-player in creating fusion is the IT project manager. The investigation into this position falls outside the scope of this project and will be done in detail in follow-up research.

The framework therefore consists of the following sections (refer to figure 1.1 for a diagram to illustrate the framework).

Section one:
Contains the industry perceptions of the relationship issues and the "expectation gap" between business clients and the IS/IT function.

Section two:
This section indicates the important role players in creating fusion and the responsibilities, knowledge, skills and attributes required for this task. This section consists of two sub-sections:

Section 2.1:   The analyst

The role and responsibilities of the people who do business- and/or systems analysis and their professional profile in terms of technical skills, non-technical skills and personal attributes.

Section 2.2:   The IT executive

When fusion between IT and business becomes important, the role of the IT executive will change. This section contains a number of organisational development responsibilities and their relevance for- and application by the IT executive are included in this section.

The following diagram illustrates the two sections of the framework:

Section 1 : Business-IT gap

Business units

Reasons:
Category 1
Category 2
Category 3
Category 4
Category 5
Category 6
…
…
Category 25

IS/IT function

Fusion

Business/systems analyst

Business units

IS/IT function

IT executive

Section 2.1
Responsibilities, knowledge, skills and atributes

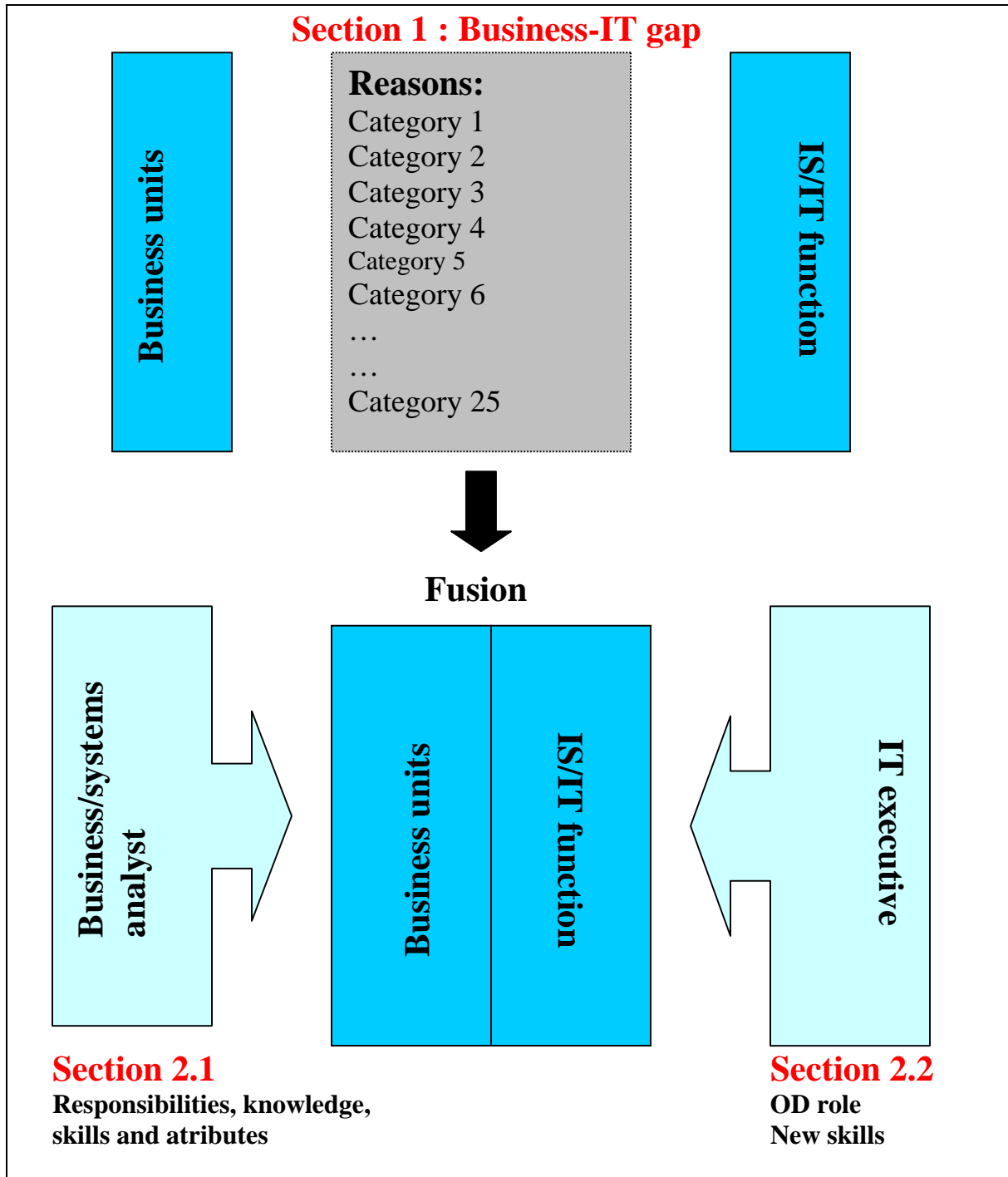**Section 2.2**
OD role
New skills

Fig 1.1

1.6   Research design

The research was done in three phases.

1.6.1   Phase one: Background literature study

An intensive literature study was done on the following topics:

- ➢ The ICT industry
- ➢ The role of Higher Education/industry cooperation
- ➢ Interpersonal relationships in the workplace
- ➢ Strategic alignment
- ➢ Fusion
- ➢ Business-IT interface
        Failed IS systems
        Relationships

1.6.2   Phase two: Non-fusion

This phase consists of an empirical study to determine the industry perceptions of the relationship between business clients and the IS/IT function. The following research questions has to be answered:

- ➢ What is meant by the expectation gap and adverse business-IT relationship?
- ➢ What is the current perception of South African companies with regards to the relationship between business and IT and the existence of an "expectation gap"?
- ➢ What are the most important groups of factors contributing to this gap?

1.6.3   Phase three: The role-players in creating fusion

1.6.3.1 Business- and systems analysts

Determine the following:

- ➢ The role and responsibilities of the business- and systems analyst in creating fusion in the modern organisation.
- ➢ The profile of the competencies, attributes and abilities required of business- and systems analysts. The categories of skills, attributes and abilities included in this profile are technical competencies, non-technical competencies and personal attributes (Harvey *et al*,1997).
- ➢ The role of the business- and systems analyst in managing the people issues arising from the relationship with business people and other role-players (the "organisational behaviour" role).

Research questions:

1. What is the role of the analyst?
2. What is the perception of South African organisations concerning:
   - ➢ the difference between business- and systems analysis?
   - ➢ the role and responsibilities of business and systems analysts?
   - ➢ the professional profile of the analyst?
   - ➢ the human behaviour issues faced by analysts in South Africa?

1.6.3.2 IT executives

In this phase of the research, the responsibilities of OD specialists and managers are identified and investigated through an in-depth literature study. The relevance of these responsibilities to the IT executive and the ways in which the IT executive can - and should - play such an organisational development role are described.

1.7   Scope of the research

This study analyses the expectations gap and relationship issues in the ICT industry in the Gauteng region of South Africa. It also defines the role of the professionals who bridge the gap between the business need and the IT solution for addressing this need. The study involves

- ➢ Companies with in-house and outsourced IT functions
- ➢ IT managers and relationship professionals, including business analysts, systems analysts, business systems analysts, relationship managers and business architects in South Africa.

Personal contact was made with participants in the Gauteng region of South Africa.

From the literature studied and discussions with prominent professionals in the IT industry, it was evident that the job title and job description of the business systems analyst is by no means a clear-cut case, but that the names Business Analyst, Systems Analyst and Business Systems Analyst are used interchangeably. The study therefore included information on all these titles to determine the needs of the computer industry concerning the required attributes and abilities with reference to their

- ➢ Role and responsibilities
- ➢ Technical knowledge and skills
- ➢ Non-technical knowledge and skills
- ➢ Personal attributes

The investigation into the OD role of the IT executive will consist of a literature survey only. The OD roles will be related to the creation of fusion in this study, but the findings will only be empirically verified in South African companies in follow-up projects.

1.8   Actuality of the study

In the past, work was what a person did in order to earn money for food, shelter and clothing. Today, people view work as an opportunity for personal growth and life enrichment. Complex work makes it difficult or impossible to function without

collaborative decisions and actions. Organisations can employ the brightest one hundred people in the world, but if they work alone, the organisation is effectively hiring one hundred self-employed people – network capital is one of the most crucial intangible assets for every organisation.

The importance of healthy relationships between organisational groups is therefore widely recognised as a key factor in improving organisational performance. Unhealthy relationships lead to unhealthy organisations. The benefits obtained from the study are :

- ➢ A deeper understanding of the link between humans, IT and business
- ➢ The capability to define employable business- and systems analysts with a broad range of generic skills and competencies which employers actually want
- ➢ An understanding of the people management role of IT managers, apart from managing technology.

Chapter 2   Literature study

The literature studied in this project relates to the business-IT interface, to determine the reasons for failed IT projects and the adverse relationship between the two parties. From these reasons, a set of criteria for effective fusion between the two could be derived. To determine the responsibilities of the major role-players in creating such fusion, literature on the world of analysts and IT managers was studied. As it became clear that people skills are expected from IT managers in the modern organisation, the elements of organisational development were identified through literature. These elements are then related to the role of the IT executive in creating fusion.

2.1   The business-IT relationship

2.1.1   Introduction

The percentage of unsuccessful information systems in organisations is very high. Burris (1999) refers to the "IT-to-business value gap" and comments that many Chief Information Officers (CIO's) do not effectively measure the impact they have on the businesses they support, leaving them vulnerable. According to him "the gap between how IT executives think they are performing (against business expectations) and how they are really performing (based on CEO perceptions) is widening". Logan (2002) says that business executives complain that by the time an IT-based business project is completed, the delivered functionality is inadequate to give the company a significant competitive advantage. On the other hand, IT executives feel they are under huge pressure if their projects are over budget, late, buggy or inadequate to meet their company's business needs. He feels that IT-based advantages can be short-lived if executive don't continue to "intelligently and aggressively deploy advanced technologies".

An attempt is made to identify the primary contributors towards failed IT projects and the adverse business-IT relationship. This part of the study consists of an intensive literature

study on the business-IT interface and the "expectation gap". The various reasons for IT project failure, the "expectation gap" and the adverse relationship between business and IT, leads to a holistic, complete picture of the business-IT interface. Such a complete picture is extremely important from an educational viewpoint, as all these aspects should be addressed in the instructional offerings to prepare learners for their role in bridging the gap.   All the aspects were identified from various literature sources and were subsequently categorised. Although most of the available literature focuses on a limited number of issues, the aim of this research is to derive the "total picture" from all these sources. The technical issues will be identified, as well as the organisation behaviour and people aspect of project failure. A large number of the sources were found on the Internet reporting the results of internal surveys done at various large companies.   A complete list of the sources used is included at the end of this chapter.

The criteria for **success** of IT projects are that they are delivered on time, on - or under – budget and the systems works as required (Whittaker, 1999).

Definitions of **failures** include extended schedules, running over budget and failing to meet stakeholder needs. According to Whittaker (1999) the definition of failure is:

> ➢ Budget overrun by 30% or more
> ➢ Project schedule overrun by 30% or more
> ➢ Project cancelled or deferred

Research done by the Standish Group in 1995 indicated that, out of 8000 IT projects

> ➢ 16.2% were on time, on budget with full functionality
> ➢ 52.7% were over budget, time and had fewer functions
> ➢ 31.1% were cancelled (Mann,2002)

Whittaker (1999) predicts that more than half of the projects that are undertaken will cost an average of 189% of the original estimate.

According to the Standish group's CHAOS report of 2000, 26% of software projects succeed, which means that 74% fail. Failure is defined as failure to complete on time and/or to meet client's needs completely. Mann (2002) is of the opinion that, more than

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one third of all software projects over-run their budgeted cost and time schedule.   Some
are abandoned in mid-stream. Users are often unable to pinpoint their need and seek to
develop systems that are too large or too complex.

2.1.2   Reasons for the failure of IT projects

In this section reference is made to various research projects focusing on the reasons for
IT system failure and the resulting expectation gap. The findings are discussed here and
categorised in the next section.
According to Mann (2002) the IT-user gap can take on many different forms, due to
different types of issues. The different types of gaps are:

Perspective gap

> IT sometimes forgets that systems must provide value to the business by meeting
> business goals.

Ownership gap

> IT feels they have ownership over the infrastructure and business feels they have
> ownership over the business processes, leading to "territorial conflicts".

Cultural gap

> IT and business have different traits, values, working behaviours and priorities.
> IT people are more introverted and analytical, whereas business people tend to be
> more extroverted and intuitive.

Foresight gap

> The groups see the future differently but cannot convince each other.

Communication gap

> The groups fail to understand what the other group means.

Expectation gap

> End-users have unrealistic expectations of what IT can do and IT promises more
> than what they can deliver.

Credibility gap

> IT has a bad track record in terms of failed projects and poor customer service.

Appreciation gap

      Each group feels that the other group does not recognise their value, hard work, long hours and contributions to the organisation.

Relationship gap

      The groups do not interact frequently enough and an "us versus them" relationship exists.

According to Aggarwal (1996) IT projects fail because the principles of Total Quality Management (TQM) are not applied to IT projects. The TQM principles would lead to activities that focus on:

- ➢ Meeting user requirements
- ➢ Improve communication with and involvement of the users
- ➢ Achieving clear definition of the problems and requirements
- ➢ Minimize defects in final software
- ➢ Deliver projects on time and within budget
- ➢ Provide flexible applications, easy enhancements and reusable code
- ➢ Require lower on-going maintenance for systems
- ➢ Reduce the number of design change requests
- ➢ Improve debugging with accurate, legible and complete documentation
- ➢ Decrease backlog by faster turnaround time
- ➢ Satisfy systems staff, resulting in reduced staff turnover

Riggle (2002) is of the opinion that failures of software projects are often a result of a breakdown at the requirements analysis level. According to the principles of TQM - which Aggarwal (1996) suggests as a way of bridging the expectation gap - the best approach to minimise defects in a software system is to understand user needs. However, many IT projects have high level, vague and generally unhelpful requirements. In many cases, developers, having no input from users, build what they believe is needed, without having any real knowledge of the business. Apart from user involvement, users must know what they want and be able to specify it precisely.   Aggarwal is of the opinion that users are often unable to pinpoint their needs and seek to develop systems that are too large or too complex. Requirements are mostly not that easy to define and many clients

can only tell what they want when they see it. It is the job of the analyst to translate requirements for clients to "see" and to do this they need to use simple language.

Riggle (2002) agrees that the most common and expensive-to-repair failures in software projects originate in the requirements phase. Post-mortem studies of these systems cite inadequate, inconsistent, or changing requirements throughout the project life cycle as the most important reasons for these failures. "If you inadvertently build the wrong system, then you must make time-consuming and expensive corrections to it. Your project team must keep repeating development cycles until it finally determines the real requirements, resulting in missed deadlines and higher budgets." Whittaker (1999) supports this in saying: "incorrect requirements create wasted work and, consequently, higher costs." The reasons for failure in the requirements phase can be summarised as follows:

User centred:
  ➢ Users don't know what they really want

Developer centred:
  ➢ Misunderstanding between the business stakeholders and developers is the root of the problem.
  ➢ Developers are not well grounded in the business.
  ➢ Stakeholders do not understand the development process.
  ➢ Developers are not familiar with the stakeholders' basic business assumptions and structure, which leads to very different interpretations of the business user's needs.
  ➢ People make the mistake of attributing communication errors to errors of the "unknowable" – development staff blames the stakeholders and the stakeholders blame the developers.

From the developers' point of view, their misunderstanding of business users is often attributed to the users changing their minds, or the user-centred failure mode. Scope is the overall view of what a system will deliver. Scope creep is the insidious growth in the scale of a system during the life of a project. When the desired functionality changes, the

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detailed requirements change and the time scale is affected. Correira (2002) says that nearly three quarters of embedded projects are either late or cancelled. Developers are frustrated by inadequate or changing specifications during project development. The causes of delays are:

- Changes in specifications
- Application complexity
- Inadequacy of the specs
- Not enough developers to handle the project
- Management of software projects is also inadequate.

Business should be realistic about what it is they want and when, and stick to it. The IEEE list of Software Requirement qualities specify that they should be unambiguous, complete, correct, consistent, traceable, modifiable, understandable, verifiable and ranked for importance and stability.

Whittaker (1999) completed a research survey on IT project management issues, involving 1450 organisations in Canada. The results revealed that the three most common reasons for IT project failure are poor project planning, a weak business case and lack of top management involvement and support. Other reasons cited were failure due to schedule overruns, the use of new or unproven technology, poor estimates or weak definitions of requirements and vendor's inability to meet commitments. The Standish report of 2000 summarises the reasons for the failure as inadequate user input, unclear objectives, incomplete requirements and specifications, frequent changes in requirements and specifications and poor planning. The following issues are also mentioned:

- Risks are not managed.
- Slippage from the schedule.
- Change in scope of technology, functionality or business case.
- Cost overruns.
- Change in key individuals (business sponsor, project manager, vendor manager).
- Bad project plans.

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➢ Incorrect estimates of activity durations.

➢ Incorrect assumptions regarding resource availability.

➢ Inadequate assignment of activity accountabilities.

➢ Missing or incomplete review and approval activities.

➢ Weak business case.

➢ Business and operational changes needed to deliver the benefits.

➢ Clearly understood deliverables.

➢ Quantified costs and benefits.

➢ Overall scope of the project.

➢ Failing project manager.

➢ Lack of skills and expertise.

➢ Project progress not monitored and corrective action not taken.

➢ Experience, authority and stature of PM inconsistent with nature, scope and risks of project.

➢ Budget and schedule overruns.

➢ Execution of project.

➢ Project team.

➢ Risk management.

➢ Project accountabilities.

Travis (2002) says business partners and IT management should share authority for managing risk, conflict resolution and project success. Business unit members of implementation teams should participate on the team through the initial implementation and into the support phase. (Travis, 2002) He also says that the single cause of most failed IT projects is unnecessary complexity. Poor training may also result in people not co-operating with the information system leading to failure and project abandonment (Kunda, 2001).   Companies often try to strengthen their technical IT project management skills without weaving the crucial people elements into the project. Increasing the return on IT investment is about more than just financial capital – organisations also need to invest in- and develop capability in IT expertise, business skills and interpersonal relationship skills. IT does not provide the right combination of technical expertise and understanding of the business requirements to provide technical solutions that will

provide answers to the real business problems. Aggarwal (1996) says that systems personnel are dissatisfied, leading to high staff turnover. Such turnover of staff leads to discontinuity.

There is a knowledge transfer problem between the IT function and the rest of the business. According to Riggle (2002) the techniques for solving the communications problem – e.g. joint application development and close consultation with subject matter experts – aren't sufficient. At the heart of the communication problem is the fact that business users understand their business at the business process level, while developers understand it in terms of data structures, etc. IT project managers must establish credibility with their business unit peers by demonstrating business process knowledge. Business unit participants should be full-time members of the project teams and there should be a "common vocabulary" among business partners and IT professionals. Business partners and IT professionals should share the authority for resources, the responsibility for managing risk, conflict resolution and the responsibility for IT project success. To maximize the knowledge learned during implementation, business unit members of implementation teams should participate on the team through the initial implementation and into the support phase.

Strong executive support is a key factor in any IT project. However, involvement at all levels, not just the executive level, is of paramount importance on projects of this kind. In many cases there is a bad relationship between the CEO and the CIO. The CEO does not have basic knowledge about how IT interweaves throughout the business. The CEO does not trust the CIO and does not communicate with him/her frequently. The CIO does not have detailed knowledge of the organisation's operational units and cannot talk at business level. The CIO does not ensure that all members of the team contribute and does not maintain a realistic timetable to meet delivery dates. The CIO should be a businessperson first and a technologist second.

Travis (2002) suggests that the CIO should be reporting to the CEO instead of the CFO. In an article in the Computer Weekly, titled *IT is the Business*, Sir John Harvey Jones (2000) asks the questions: Why can't we grasp that the Internet revolution demonstrates

that business is IT and IT is business? Why, when everything else is up for grabs and we know a new world is emerging, can we not put as much thought into this critical organisational issue as we would put into designing a web site? Why is the head of IT not an officer of the board like the legal officer, so that the IT implications of every business initiative are explored and co-ordinated?

Callon (1996) summarises the reasons for IT project failure as follows:

- ➢ Complexity.
- ➢ People get caught up in their work – they move from one project to the other without gathering or applying lessons learned.
- ➢ People manage technology projects the same way they manage other projects.
- ➢ Technology changes halfway through the project.
- ➢ Business requirements change halfway through the project.
- ➢ New projects are not integrated into existing systems and technology.
- ➢ Project team members have to learn the technology as they go.
- ➢ Projects are managed singly – like disjoint construction projects.

Fielding (2002) is of the opinion that poor project management is largely to blame for failure of IT systems. He attributes failure of IT systems to the following:

- ➢ Inadequate planning.
- ➢ Poor scope management.
- ➢ Insufficient communication between IT departments and the business.
- ➢ Training lacks practical insight; the skill of project management is in knowing when and where to apply the techniques.
- ➢ Lack of a robust business case.
- ➢ Ineffective application of project standards and processes.
- ➢ Inappropriate level of attention to managing project risk.

Murray (2001) says that, "while with any IT project failure the IT department must accept some portion of that responsibility, too often that portion is too large and too restricted". Furthermore the project manager

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- ➢ may try to shift the blame for a failed project to others.
- ➢ does not regularly report the status of the project.
- ➢ obscures or hides project-related problems.
- ➢ is not assigned to the project full-time.

Project mismanagement refers to

- ➢ Failure to establish upper-management commitment to the project.
- ➢ Lack of organisation's commitment to the system development methodology.
- ➢ Poor expectations management.
- ➢ Taking shortcuts through and around the system development methodology.
- ➢ Premature commitment to a fixed budget and schedule.
- ➢ Poor estimating techniques.
- ➢ The mythical man-month.
- ➢ Inadequate people management skills.
- ➢ Failure to adapt to business change.
- ➢ Insufficient resources.
- ➢ Failure to manage the plan.

Fielding (2002) refers to Bryan Cruickshank, UK head of information risk management at KPMG, who criticised companies for failing to recognise strong project management as a key factor in IT project success. Project mismanagement can undermine the best application of business analysis, systems analysis and design methods. According to Cruickshank "it is a pretty concerning picture" and "not enough attention is given to what project management is". Travis (2002) says project managers should establish credibility with their business unit peers by demonstrating business process knowledge. They should combine technical experience with business unit experience.

Other project-, project management and project manager related issues are as follows:

- ➢ There is no project management methodology in place.
- ➢ The project champion is not involved through the entire lifecycle of the project.

> ➢ The project champion does not address the business-related issues as they arise.

> ➢ People assigned to the project from the business unit do not take their assignments seriously.

> ➢ Business unit people must remain active participants in the development and testing of the project.

> ➢ A project is signed off on the promise that errors will be fixed later.

> ➢ Senior managers adapt a "hands-off" policy when it comes to IT projects because it is too technical.

> ➢ Senior managers sign projects off without understanding the benefits and risks associated with the project.

> ➢ Senior managers don't ask questions and challenge assumptions because they don't understand the technical aspects of the project.

> ➢ Many IT projects represent a considerable investment and carry heavy risk for the organisation.

> ➢ Vendors promise more capacity and levels of project support from their staff than they are willing to deliver.

> ➢ A formal contract is not signed between the organisation and the vendor.

> ➢ IT has the image of always throwing money at the latest technology (Murray,2001).

Kunda (2001) says there is customer resistance because the user does not identify with the software system that it belongs to them. Individuals working together in a group may have different needs and objectives that need to be harmonized. Some people within organisations are more powerful than others through their positions of connections with powerful people. The problem is customer-, developer- and management resistance to change.

Aggarwal (1996) summarises the reasons for the expectation gap as follows:

> ➢ Unrealistically high expectations of users in the face of limited resources.

> ➢ Unrealistic project completion date coupled with continually changing requirements.

➢ Long lead time because of backlog problems, complexity of projects and manual developmental techniques.

➢ Lack of user involvement because of behavioural, organizational and political issues.

➢ Improper planning, estimating, scheduling and monitoring.

➢ Inappropriate and inadequate analysis and design.

➢ Inflexibility of design to incorporate unscheduled changes in requirements.

➢ Unplanned absence of resources because of breakdowns of equipment and turnover of personnel.

➢ A lack of clear and consistent definition of the problems leads to the development of systems with which users are dissatisfied. Good documentation is critical for effectively managing and implementing projects. The scope of the project should be well defined and should truly reflect the business needs.

➢ Users are not involved in the planning, development and implementation of a new system.

➢ "Frozen specs" – users lose enthusiasm and sense of ownership if their required changes are not made.

In an organisation it is important to determine how much is actually spent on what. The question should be asked: Are IT costs included in the annual corporate budget? If not, it is a sign of lack of collaboration between the business and technology sides. If IT costs are not included in the annual corporate budget, it is a lost opportunity to see how IT fits into the whole. In an article by Eckhouse (2002) the following is said: "Conventional wisdom says savvy organisations are inviting top IT executives into discussions about the overall corporate budgeting process." Organisations should recognise that the IT department is "more than a cost centre or a necessary evil". In a survey done to determine whether top IT executives are brought into deliberations about all major business issues, including budgeting, the following was found: Business side managers and staff thought that they've included their IT counterparts in overall corporate budgeting. However, 42% of the IT executives said that they were only involved when the IT budget is being discussed. "There is an enormous gap between perceptions and reality. Another important finding from this research was that sufficient resources are not

devoted to IT to meet the technology needs of the organisation. "While IT and business professionals acknowledge the importance of the IT organisation, they don't see eye-to-eye when it comes to money".

2.1.3 The relationship gap

Software systems do not exist in isolation, but they are used in social and organisational contexts. The people and the culture of an organisation determine how the system is used. Individuals in a group should interact both formally and informally. Relationship problems occur when IT professionals have to deliver products and services in a strategic vacuum at a large cost reduction and business line managers question IT's high costs and their failure to focus on the critical business needs. Employees often resist technology because of decreasing self-confidence in their ability to learn new skills, difficulty in adapting to new systems and fear of displacement. This leads to decreasing productivity, employee turnover, low morale and indecisiveness (Bradshaw-Lynn, 1999). Logan (2002) says "unless and until IT and business executives are truly collaborating and focusing on the same measurement goals, any strategy will inevitable go awry in formulation or execution." If the individuals in a group are not in harmony, the success of the software system will be affected (Kunda, 2001). In a survey to determine whether IT project were "doomed to failure" Fielding (2002) found that "unless the business feels that IT belongs to them, they will never get it right."

According to Kunda (2001) the major cause of most software failures is the people rather than technology. He suggests that the factors that should be addressed during software development are political issues, organisational and business strategy, organisational resources and support, organisational setting and management style and organisational culture. Logan (2002) supports this by saying: "too many companies fail to recognise the cultural differences between business managers and IT professionals and therefore fail to take steps to bridge those differences." The solution to better software projects often lies not in just better design tools, but in better management. Correira (2002) says " managers need to examine the management of their software development projects." Leadership is necessary to provide the imagination, purpose, teamwork, values,

organisation, commitment and consistency of purpose that transforms companies and business units.

The relationship gap refers to stereotypes that originates when two groups do not interact frequently and effectively enough and the prejudgements of the other group are never checked. Companies also fail to recognize the cultural differences between business managers and IT professionals and therefore fail to take steps to bridge those differences. Line-of-business managers and IT professionals approach their daily jobs and new challenges very differently. According to Aggarwal (1996) the credibility of information systems personnel has suffered because they could not meet the expectations of the users. Users have therefore created the negative image that systems staff cannot get anything done on time and within budget. Because of the negative image, user support for future projects becomes increasingly difficult. Fielding (2002) agrees that most IT departments are still "held in very low esteem". They need to build personal relationships and "be caught doing things right."

As a result, companies have developed an unfortunate and destructive culture of "us" versus "them".   Logan (2002) refers to "rivalry between IT and business factions" and suggests that "fences must be mended" for the relationship to improve. Mann refers to the "I know more about computers than you do" mentality of it personnel as seen in two technical people "participating in a swift competition over jargon to see who is more technically competent". The message they send out is that one should never lose face or admit to not knowing something. It is more important to appear knowledgeable than to be competent. This behaviour is the exact opposite of what it takes to make end-users comfortable. IT professionals should realise that, although they have less technical knowledge, end-users are experts in their own fields and that they (IT professionals) should not assume that they know what the user wants.

According to Riggle (2002) misunderstandings between the business stakeholders and developers are the root cause of failed IT systems, mostly because developers are not "well-grounded in the business" and the business stakeholders "do not understand the development process".   This leads to very different interpretations of the business user's

needs. Haim Mendelson, professor of Electronic Business and Commerce at Stanford University refers to the importance of knowledge transfer, so that the person in IT gains domain knowledge of the business issues and can think of IT in the context of the business, and visa versa for the business people. "Once they gain a better understanding of IT capabilities, they know what is possible and impossible, and think more realistically" (www.cioinsight.com). John Eckhouse, contributing editor of *Optimize Research*, found that technology professionals believe that "business managers hardly understand the IT organisation's strengths and challenges in managing the company's infrastructure". Although this was not how business saw itself, both parties agreed on the importance to understand the IT infrastructure and the need for IT to "talk tech" with line-of-business managers. Business executives need to understand the requirements, risks and rewards of using advanced technologies.

Cormack (2001) attributes tension in the relationship to

- ➢ An indirect reporting relationship between IT director and CEO
- ➢ Horror stories
- ➢ Poor communication
- ➢ High staff turnover
- ➢ Centralised IT structure
- ➢ Help Desk procedure and systems delivery process
- ➢ Lack of clear control
- ➢ Low interdependence
- ➢ Expert and position power

2.1.4   Summary of the issues in the business-IT relationship

In total 192 reasons for i) failure of IT projects and/or ii) an adverse relationship between business and IT were obtained from the literature study. Many of the issues are related, which resulted in categories of related items (included in chapter 4). A list of the categories with the related issues in each category is shown in appendix 3.

2.1.5   Bridging the gap

Unless and until IT and business executives are truly collaborating and focusing on the same measurement goals, any strategy will inevitably fail. Few companies have the critical number of enterprise-technology executives within their senior ranks who can recognize how advanced technologies should be strategically deployed to increase market value. Innovative strategy setting with substantive IT input can occur only after business and IT executives are comfortable working constructively together. Both poorly executed good strategies and well-executed bad strategies have inherent long-term dangers.

The Senior Director of Delivery Services at Core Integration Partners, summarises the areas that need to be addressed to bridge the gap are:
> ➢ Define – getting precise requirements for a project
> ➢ Educate – include both formal and informal training
> ➢ Participate – get involvement up front and have good communication plans
> ➢ Promote – build excitement and a sense of purpose
> ➢ Deliver – focus on quick visible wins that provide bottom-line business value and manage expectations

All these aspects will be included in the "big picture" when investigating the expectation gap.

According to Kunda (2001) the factors influencing success are:
> ➢ Customer ownership (There is customer resistance, because the users do not identify with the software system and don't see it as belonging to them).
> ➢ Motivation and gradient of enthusiasm of IT personnel.
> ➢ Incentives of IT professionals.
> ➢ Cognitive skills of all stakeholders.
> ➢ Perceptions (Group members have different perceptions and bias as to what makes a good system).
> ➢ Different goals.

➢ Group members have different needs and objectives that should be harmonized

➢ Interactions and communication (There has to be harmony in the group, else the success of software systems will be affected).

➢ Organisational and business strategy (There is a need for systems with shorter lives and greater adaptability).

➢ Organisational resources and support (Work overload, skills shortages, budgetary pressures).

➢ Organisational setting and management style (The arrangement of organizational subsystems, the division of labour and hierarchy of authority).

➢ Organisational culture (The culture of the organisation affects system requirements and system acceptance).

In his study Cormack (1999) showed that cultural characteristics associated with a healthy Business-IT relationship would be

➢ a direct reporting relationship between IT director and CEO.

➢ success stories.

➢ technical ability of IT professionals.

➢ decentralised IT structure.

➢ IT expenditure controlled by the business.

According to Eckhouse (2002) business should recognize that the IT department is more than a cost centre or a necessary evil. Top IT executives should be brought into deliberations about all major business issues, including budgeting. He feels that the IT budget is too low relative to sales. Furthermore, technology is too complex for most business managers to understand. Business managers hardly understand the IT organisation's strengths and challenges in managing the company's IT infrastructure.

Haim Mendelson, professor of Electronic Business and Commerce at Stanford University, says that personal relationships can make a big difference in alignment between business and IT. These relationships should be developed on all levels.

2.2   Business- and systems analysis

2.2.1   Roles and responsibilities

Many organisations have a role called business analyst, sometimes combined with the role of systems analyst. The combination of business- and systems analysis is sometimes referred to as business systems analysis (BSA). There doesn't seem to be any standard definition of what a business analyst or a systems analyst is and what they should be doing, although every organisation seems to have them. In a case study from one of the worlds largest financial services group, Lloyds TSB (BPMG, 2000) the comment is made that business analysts are rarely understood for the value they bring to the process of business change. The difference between organisations that become victims of change, and those who benefit from change, lies in the role of the analyst as "a vital element in, and lubricant of the change delivery." The analyst has to reconcile the needs and fears of all the stakeholders in the change process. Unfortunately business analysts and systems analysts are still classified more in terms of specific skills sets based on vendor products, solution architectures, tools and technologies, rather than the base level of professional skills and experience needed to span any problem domain. As worded by one of the interviewees "a profession cannot be defined in terms of specific industries, products, technologies and/or methodologies. What appears to be missing is the definition of an analyst (business and systems) in terms of the base level role, professional skills, responsibilities and experience required to span any industry and problem domain."

In their article "The Systems Analyst: A Post Mortem" Morrell *et al* (2000) state that "the most compelling changes have been in the roles that culminated in the title of systems analyst." They ask the question if such a role still exist. According to them the growth in information technology has led to a "diversification of roles", which caused some confusion, especially where tow jobs have similar sounding names (e.g. systems designer and systems analyst) or when different names were given to the same job. A detailed search at America's Job Bank (http://www.jobsearch.org) produced 904 jobs related to systems analysis. The most listed generic skills required for these jobs were:

- ➢ technical skills
- ➢ problem solving skills
- ➢ writing skills
- ➢ communication skills
- ➢ project management skills
- ➢ teamwork skills
- ➢ leadership
- ➢ familiarity with the SDLC
- ➢ troubleshooting skills

Whitten *et al* (2001) defines the systems and business analysts as follows:

"A *systems analyst* studies the problems and needs of an organisation to determine how people, data, processes, communications and information technology can best accomplish improvements for the business.

A *business analyst* is a systems analyst that specialises in business problem analysis and technology-independent requirements analysis."

Whitten says that business analysts are typically recruited form the user community and therefore they focus on business and non-technical aspects of systems problems solving.

The most common definition of business analysis describes it as the process of analysing a business, or some aspect of it, in order to identify ways or areas to add value to the organisation. From an IS/IT perspective, the focus is to examine how technology can contribute to that added value. One interviewee mentioned "although industry talks about the need for IT to add value to business, this is still a rare occurrence in practice and that is the crux of the BA role". Systems development is mainly concerned with the process of developing a system or completing the life cycle of a project. Business analysis deals with the business issues, business problems and opportunities, rather than the project development details.   There is no cut-off point between the two, hence a knowledge of systems development issues and techniques is essential.

According to Stephanie Bulmer of Logical Conclusions Inc. (www.lci.co.za) a company responsible for training business- and systems analysts in South Africa, "in some way a

business analyst is similar to a 'trip planner'. They will help a user determine their wants, focus on a destination or desired outcome, outline possible maps of how to get there and analyse all the other aspects of the 'trip' to help guarantee success. The difficult part is to refrain from getting too deep into designing a solution."

Their job is to identify, document and validate requirements. They may also help to scope the system, identify potential areas of automation and improve the underlying business process. A critical skill of the BA is the ability to investigate and understand how a business actually works, as opposed to how developers think it works or want it to work. BA's can also "pair-program" with one of the developers on code or work with users on developing acceptance tests.

According to the B2T Training group (www.b2ttraining.com) business analysis is one of the most fundamental and challenging information technology positions. According to them, "business system analysis moves a project from its initial state of uncertainty to a clearly defined and agreed upon set of requirements, through to an information system, which would solve the business problems". These analysts are responsible for analysing business needs through careful study of business processes and communications with customers. A business system analyst is therefore "an individual who gathers business requirements and documents them textually or within models". Once the analysis is completed, the analyst must communicate the results to the programmers who will code and implement the solution. Business system analysts therefore need to communicate business needs to information technology specialists. He/she acts as a liaison between business people who have a business problem and technology people who know how to create automated solutions, throughout the entire development and installation process. The business analyst is key to ensuring a good fit between the information system and the organization. Their role is integral to the success of the information system and, in turn, the success of the organization.

The business system analyst is involved in the following steps of the Software
Development Life Cycle (SDLC):

Analyse needs

➢ Analyse problems

A major reason for any IT project is dissatisfaction and unless the business
systems analyst understands the problems that drive the desire for change,
he/she cannot propose effective technological solutions.

➢ Model business data

Organisations have to manage their data, like any other resource (money,
people, inventory).

➢ Gather requirements

Without clear requirements developers have to guess what the user wants.

➢ Analyse processes

Processes are analysed to establish problems or potential problems and
find solutions that are more efficient.

Design solution

➢ Evaluate potential solutions

Taking the time to compare alternatives instead of going with the first solution
that comes to mind avoids creating worse problems than the ones you had.

➢ Develop quick fixes

Quick fixes can mitigate problems with minimal investment and gain time for
the project to implement the right solution.

➢ Engineer business processes

Business processes can be engineered to take advantage of modern
technologies and new methods.

➢ Design system architecture

A clear picture is needed to show the constructs like hardware, software,
people and organisations and their relationships, to avoid overlooking a
minor component that may endanger the entire project.

Test solution

➢ Plan testing activities

A test plan defines the testing activities required to achieve sufficient confidence in a solution to put it into production.

➢ Engineer test data

Engineered test data enables you to reliably predict the expected results in sufficient detail to avoid misinterpretation. Data can be specifically engineered to show that the program works and where the program fails.

➢ Execute tests

Errors that are identified when the system is in production can cost 80 to 100 times more than errors detected during the system development process.

Bulmer (www.lci.co.za) summarises the responsibilities of the analysts as follows:

➢ Listen to the users

The business analyst has to listen empathetically, sift through the extraneous wordiness and get to the point of the conversation without seeming rude or arrogant. Users often speak of their own needs, without consideration of other groups, departments, divisions or legal issues. They can be ambiguous and vain and the business analyst should keep them focused and on the trail. The more knowledgeable the user is, the more likely he is to make assumptions and leave key information out of the conversation – the business analyst has to push for this information.

➢ Gather information

The business analyst should always do further research to validate the user's requests. Sometimes the user has no idea where the data/information is. Each user knows their piece of the puzzle – the Business Analyst has to document the entire puzzle to understand the big picture and determine how to put the user's view in perspective.

➢ Translate and analyse

A good analyst should be able to listen to the users, analyse their requests, document the requests and then communicate these requests to the development group in a way that the development group can understand.

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He acts as a liaison between the users and the development team. Developers and users should not speak to each other – they speak different languages and have different objectives. A good analyst will look at all sides of the situation and will translate a request to reflect the business purpose, not only what the user wants.

➢ Propose solutions

A business analyst must be capable of suggesting solutions that will meet the needs of the business. The purpose is to define the "what" and not the "how" - it is difficult to hold back on the urge to create the solution. This is the toughest part of the job – the business analyst must remind himself regularly that he is an analyst, not a designer.

➢ Speak up

The business analyst must speak up to let the voice of the user be heard. He has to intervene and convince the developer if the proposed solution will not meet the needs of the user.

The business analysts doubles as a

➢ translator - able to communicate in a user's language and a developer's language.
➢ politician – trying to offend no one, as all parties are essential to the success of the group.
➢ judge - maintain a balance between the users and the development groups.
➢ navigator – navigating users and developers towards a business solution that meets the needs of the business.

They are counsellors, detectives, translators, technical experts, user experts and process experts all in one.

2.2.2   Job titles

Traditional job titles for staff-level IT workers, such as programmer and systems analyst, used to define where people fit in the IT world. But those titles may be less important in an era when skills and experience seem to outweigh titles in determining rank and pay. Alexander (1999) supports this in saying "there appears to be only a handful of non-

management IT job titles whose definitions are widely accepted, namely programmer, programmer analyst, systems analyst and project manager. Even these definitions can be fuzzy. A programmer may be called a software engineer, software developer, or an application developer. A programmer analyst can be called a senior programmer or a senior developer. There is often no distinction between a systems analyst and a programmer analyst."

Although IT recruiters say they still find traditional titles useful in finding full-time job candidates, those same titles are judged to be inadequate or irrelevant by corporate hiring managers and recruiters. Nevertheless, people sometimes turn down a job because it is labelled 'programmer' rather than 'senior programmer'.   One recruiter verifies this: It's absurd, but titles are very important to certain people." Some companies create their own titles, adding to the title confusion - titles are likely to become more confusing in the future. Alexander (1999)

According to Alexander 'business analyst' is one of the least well-defined IT titles. It can mean a technical person with some business expertise, or a businessperson with some technical skills. The business analyst is a "squishy job title", but it is important and those people are hard to come by. "There are technical people who know bits and bytes but can't speak in end-user terms, and business people who lack enough technical expertise to make things happen in IT."

Even the hierarchy of IT job titles is breaking down. For example, one version of the IT hierarchy lists these jobs in ascending order: Programmer analyst, senior systems programmer, senior systems analyst, project manager, network administrator and computer operations manager. But, according to Alexander (1999) pay doesn't necessarily go in that order anymore and "a project manager's authority varies widely from one company to another." In the modern view of business analysis, it consists of the specification of business requirements, followed by the specification of the technical requirements and designs.

2.2.3   What is required of the business systems analyst?

Literature indicates that analysts must have abilities in two major areas. First, they must be able to deal with users. This means analysts should have good interpersonal skills, be able to communicate, and have knowledge of the user's functional area. Second, analysts should have sufficient technical knowledge so that they can understand the capabilities of computers and are able to gather and interpret facts. Interpersonal skills are becoming an even more important component of the functions performed by systems analysts. Even the experts do not agree on the proper and correct tools, techniques, and methodologies to be used during systems analysis and development. In reviewing the literature relating to systems development, it was discovered that many different approaches have been implemented over the last 30 years to assist analysts in developing computer-based information systems.

According to Miller (1998) business analysts need to have a sense of what it takes to run a successful business. "Firms are looking for business systems analysts because they want people with business savvy, who also know how to work with data."   Chase (1999) supports this by saying that business analysts should be focused on "influencing business decisions that impact the sales forecast".   They have to determine where the inefficiencies are and make recommendations to improve the profitability of the business. The problem is that business problems "do not come as neatly packaged as marketing problems, accounting problems or organizational problems. They arise within the context of the business, with all the complexity and richness that a business provides" Miller (1998).

Miller also states that business systems analysts work in cross-functional teams and they are involved in building consensus and making management decisions. They work with computer scientists, management scientists, information systems analysts, database specialists and administrators, economists, statisticians, accountants, financial managers, financial analysts and market analysts. They should be good communicators and team players. Therefore training in communication and negotiation skills is desired.

Business- and systems analysts have to understand their customers and the markets. Research design and analytical skills are critical – e.g. conducting market research studies, using database- and statistical packages. Training in measurement and statistics is desirable.

From many different literature studies conducted all over the world it became clear that people with both technical skills and soft skills enjoy unlimited opportunities with the knowledge-based companies. According to the case study from Lloyds TSB, (BPMG, 2000) a key role of the analyst is to identify and reconcile the practical and 'people' problems that can "bedevil and delay the best planned projects". For the first time, 'soft skills' like stress management and personal growth are on the corporate agenda. It seems that companies offer people with substantial soft skills, but minimal technical skills, the same opportunities as those with good technical skills.

2.3   Organisational Development (OD)

2.3.1   Introduction

Increasing competition, higher performance levels, globalisation and liberalisation are examples of the immense challenges that many organisations face today. Companies are forced to continually re-organise and re-profile themselves. To cope with these changes, Information Technology is used to strengthen operational efficiency and effectiveness and to quickly and constantly respond to customer needs and competitive pressures with IT enabled products, services and distribution channels. To remain viable, organisations need to utilise new technologies to gain a competitive advantage. Organisations are thus profoundly affected by technological advancement and therefore change methods and techniques that help individuals and groups make the best use of available technology are needed. (Mutsaers, 1998)

Kuruppuarachichi (2002) refers to a study done by Martinez, to determine the critical stages for large-scale project success. The two initial stages are critical, namely "project scope definition and planning" and "culture and value assessment". These two stages

should address strategic decision making, business vision, executive support, communications, operational expertise, competent team members, quality assurance, project administration, system integration, change management, project control, work environment, user involvement and knowledge transfer. It is necessary to define the scope of the project as completely as possible so that all team members understand and agree to what is being undertaken. The culture and value assessment may include the following:

> ➢ identify and analyse pervasive culture and values of all affected business units and the IS division.
> ➢ recognise characteristics of cultures and values appropriate for successful. implementation of the level change caused by the project.
> ➢ prepare a change management plan to gradually move the organisation toward behaviour consistent with the change.

To understand and analyse how effectively organisations are utilising IT to support business transformation, Venkatraman (1994) developed a model in which he differentiates between *evolutionary* business change, requiring minimal process change, and *revolutionary* levels of business change.   He found that "the benefits of IT deployment are marginal if only superimposed on existing organisational conditions. Thus benefits accrue in those cases where investment in IT functionality accompany corresponding change in organisational characteristics." O'Connor & Smallman (1995) supports this by saying that "capitalising on IT requires something more fundamental than merely changing a corporation's structures, business processes and strategy. It requires individuals to change their behaviour. They must change what they do, how they do it, how they work with each other, how they work by themselves.

2.3.2   What is organisational development (OD)

Organisational development is "a system-wide application of behavioural science knowledge to the planned development, improvement and reinforcement of the strategies, structures and processes that lead to organisational effectiveness" (Cummings and Worley, 2001). At its simplest, OD consists of a cycle of diagnosis and intervention. It

applies to the processes, strategies and structures of the entire system, such as an organisation or a department within an organisation (e.g. the IT department). It is based on behavioural science and practice on micro level (leadership, group dynamics, work design) and macro level (strategy, organisational design and internal relations). OD is concerned with planned change, involving planning to diagnose and solve organisational problems. However, these plans are flexible and revised as new information is gathered. OD involves the creation and subsequent reinforcement of change. Just like a strategy without implementation, a change program, which does not address how the change could be institutionalised, means nothing. The purpose of OD is therefore to improve organisational effectiveness and create an organisation that can solve its own problems and has high performance and a high quality of work life.

Not all change is OD. It is important to note that OD differs from traditional change management in the sense that it supports values of human potential, participation and development. Change management, in the traditional sense of the word, is more focused on values of economic potential and the creation of competitive advantage. Development refers to an actual and perceived need for change on the part of the organisation, it involves the organisation in the planning and implementation of the change and it leads to changes in the organisation's culture or systems. All OD involves change management, but change management may not involve OD.

2.3.3   The move towards holistic OD

The field of OD has broadened significantly during the past 50 years.
Organisational development consists of interventions made on four different aspects of the organisation:

➢ Human process interventions

Human process interventions involve approaches for working with interpersonal and group process as well as larger organisational processes.

➢ Techno-structural interventions

Techno-structural interventions include restructuring organisations, employee involvement and work design.

➢ Human resource management interventions

Human resource interventions refer to issues such as performance management and developing and assisting organisational members.

➢ Strategic interventions

Strategic interventions can be working at the organisation and environment boundary or organisational transformation. (Neuman,1999).

McNamara (1999) uses an effective analogy to describe the new approach needed for OD in modern organisations. In the traditional definition of OD, and organisational problem is diagnosed and then an intervention to fix it is prescribed, much like a traditional doctor treats a patient. In today's high stress environment, the patient soon experiences other problems with other symptoms. More often than not, the patient assumes that discomfort is what life is all about and resigns to a lower quality of life than could otherwise be had.

People are now seeking remedies in alternative, holistic forms of medicine. These medicines work from a systems perspective, rather than the linear model of traditional medicine. Practitioners consider all aspects of the patient including mental, physical, emotional and spiritual and have no illusions of "fixing" anything.   Instead they work towards wellness and improving the overall quality of life for the patient. What is important here is that the practitioner and the patient must work together to allow the patient's system to start taking care of itself. Holistic services also include various forms of treatment, e.g. training on stress management, exercise and diet, counselling, massage, acupuncture and herbal medicine. These treatments are integrated into a comprehensive treatment programme, including ongoing support towards "life changes".

Today's organisations are experiencing change like never before and many OD practitioners now also find that after they've treated one organisational problem, another soon surfaces. OD practitioners should take a holistic "systems view" of the organisation. They must focus as much on processes between the parts of the organisation as on the parts themselves. A new definition of OD is needed – a definition that integrates and accommodates new methods to enhance the effectiveness of organisations. According to McNamara (1999) OD should "expand the candidness of

members with each other" and to "take greater responsibility for their own actions as organisation members". Through doing this, organisational members would discover new ways of working together, "towards achieving their own and shared (organisational) goals".

One of the goals of this study is to determine all the issues related to organisational development and to derive from this the OD role of the IT executive/CIO in managing the relationship between business and IT. The focus is on their role in organisational development, as opposed to a pure change management role. For instance, for OD to work, IT executives must believe that people are important, not mere "human resources" to be used and discarded. Only by bringing out the best in people, organisations will reach optimal effectiveness and increase profits. According to Appelbaum (1997) "integrating organisational development and technological intervention into a total system is one of the more difficult tasks for an executive or consultant to execute". As organisations are affected by technological advancements, they require a flexible customised change model to fit the social network of the specific organisation into which change is being introduced.   This challenge demands that an OD practitioner possess expertise and judgement in social, technological and systems theory and practice. It seems clear that the IT executive who refuses to face the reality of their changed role and what is now expected of them, are inevitably going to be sidelined (Cummings& Worley, 2001).

The study will not attempt to identify, but rather study in depth, the areas where the IT executives can play a role in organisational development. We aim to derive the "big picture" of organisational development as applied to the business-IT relationship and the role of the IT executive in applying these principles. This will be done without going into too much discussion and detail on each aspect of the OD process.

2.3.4   Who is responsible for OD?

2.3.4.1 OD Consultants

In the past, research has focused on organisational development, but mostly from the viewpoint of the internal or external OD consultant, providing professional services – diagnosing problems, developing solutions and helping to implement them. Consultants specialising in OD can play an important role in designing interventions. They can acquire useful information from suppliers, employees and managers. Secondly, they can provide insight into organisation change issues not previously understood by senior management. Third, they can facilitate organisational change decision-making sessions that lead to management action. Fourth, they can provide specialist organisational change expertise in a new procedure or technique that is unknown to the organisation. Sometimes, senior management in an organisation get so close to their organisation that it is hard to see where there are breakdowns or where improvement is needed. They realise there is something they don't know, by they don't know where to look, how to define what is missing, or what to do about it. By the time they realise what is wrong, they've lost momentum, profits are eroding and they're losing their competitive edge. Professional OD consultants can help organisations discover where they need new insights and interventions.

OD consultants need to develop both understanding about and competence in interventions that address organisational levels of analysis and psychodynamic levels of analysis.   Neumann, Miller & Holti (1999) suggests three contemporary challenges for OD practitioners, namely:

1. More up-to date motivational knowledge.
    The organisation as a construct is shifting. The use of part-time, temporary and contract workers, as well as partnerships, mergers, acquisition and supply-chain relationships have made boundaries much fuzzier. The organisation is more difficult for employees to identify and identify with. Organisational consultants should study the contemporary conditions, which various employee groups, as

well as individuals, experience as motivating. Conventional managers find it difficult to accept that commitment should be to the task, not the managers themselves or to the organisation. Authority should derive from competence, rather than rank. Organisational consultants cannot presume to know the motivation of employee groups without adequate diagnosis. They need to discover the state of motivation of the employees in the particular situation in which they are working, taking care to attend to differences amongst employee groups.

2. The ability and willingness to work with change agents who are unsympathetic towards applied social science.

OD no longer holds the role within most organisational sectors as the first choice for expertise on change management processes. Many engineering and management professionals are successfully competing for this position. Organisational consultants increasingly find multiple, simultaneous change initiatives that are being managed by leaders from functions other than human resources or organisational strategy. It is not unusual for these change managers to have their own consultants, working from models of organisational change and development that differ dramatically from OD.   OD practitioners need to increase their ability to understand and work with change managers and their consultants, who see the world predominantly through technological and economic eyes. A challenge for the more generalised OD practitioner is to complement this sector specific expertise. Many changes are currently being brought about through abuses of so-called "change management". The OD practitioner should offer something more sophisticated and assist their clients in increasing visibility, gaining credibility and making a case for "people related" concerns during technological and economic developments.   They should create meetings for the various 'change agents" to gather and negotiate overall change strategies.

3. Use methodologies for both cultural change (attitude) and structural change (organisational design).

> OD consultants should move away from the application of known methods towards active self-study and development of new methods to address new organisational challenges. (Neumann, 1999)

2.3.4.2 Other role players

According to Doyle (2002) the role of the change agent, who aids organisational development and transformation, is changing. Discontinuous and radical organisational change is extending the role beyond the singular, full-time, mandated individual (usually a seconded manager or external consultant) to encompass a more diverse, multi-functional, mixed status "cast of characters" who are now accommodating change responsibilities with their existing operational, professional or technical roles. Due to the introduction of new structures, cultures and working practices, managers and employees are actively encouraged to innovate and implement change processes in their area of responsibility with the aim of increasing levels of productivity, quality and customer service.

For some, the existing skills and personal capacities that for so long seemed adequate and appropriate in operational or professional roles, are no longer sufficient when they found themselves involved in managing a change event or situation. The added change responsibilities create personal and ethical conflicts and ambiguities. Individuals may discover that they lack the level of sophistication in interpersonal and communication skills or the level of emotional resilience to perform as an effective change agent. A lack of political skills means that they cannot cope with the broader and more intensified political context that results from added change responsibility. The new role sometimes involve "overt coercion and manipulation" to produce results.

Many non-OD specialists who become involved in organisational change are initially "change novices" who should be supported by the organisation through training and developing individuals with a specific focus on developing change management

expertise. These managers often find themselves under acute political or emotional pressure, often stemming from feelings of inadequacy. Doyle (2002) refers to Stuart in saying that organisations who want to change should come to terms with the "realities of what change looks like on the ground". He suggests that decisions about selection and development for change agents must accommodate and deal with the psycho-emotional and political issues facing those who manage change on behalf of the organisation. (Doyle, 2002)

According to Cummings & Worley (2001) more recent perspectives expand the scope of OD to include:

1. Professionals in related disciplines, such as industrial psychology and organisation theory.

    It is very clear that the consultant cannot work in isolation. For organisational development to work it must be a unique solution designed for the organisation, taking into consideration the future needs of the organisation. Long (1996) supports this by saying that, even if organisational development consultants are used, the organisation itself must

    ➢ identify, define and own the problem.
    ➢ take sole responsibility for the production and implementation of the management policies and procedures.
    ➢ identify and remove the attitudinal blocks which prevent progress and innovation.
    ➢ build the cultural climate to incorporate empowerment
    ➢ ensure that all decisions are corporate in nature.
    ➢ ensure that the learning extracted from any activity is properly managed and applied.

2. Line managers who have learned how to carry out OD to change and develop their departments.

    Cummings and Worley (2001) suggest that OD must become a general management skill; more than this, OD must become a functional manager (read: IT executive) skill. Functional managers cannot deny their responsibility toward

organisational development anymore. The term OD practitioner applies to an increasing number of managers and administrators who have gained competence in OD and who apply it to their own work areas. Studies and recent articles argue that OD applied by managers rather than OD professionals is growing rapidly. As managers gain OD competence, they become its most basic practitioners.

2.3.4.3 The IT executive

Literature on the reasons why IT projects fail and the adverse relationship between IT and the rest of the business, implies that there are a number of social problems that must be addressed before an IT executive can be effective in organisational development. To understand the challenges of organisational development, the IT executive must place himself in the position of the HR manager and see the challenges from his perspective. However, OD is the planned process of developing an organisation to be more effective in accomplishing its desired goals - it is distinguished from human resource development, in that HRD focuses on the personal growth of individuals within organisations, while OD focuses on developing the structures, systems and processes within the organisation to improve organisational effectiveness. OD is therefore concerned with change that will more fully integrate individual needs with organisational goals, lead to greater organisational effectiveness through better utilisation of resources, especially human resources, and provide more involvement or organisation members in the decisions that directly affect them and their working conditions.

Many IT executives are still unaware of the many human organisational factors that can be attributed to project failure. Many IT executives fail to take a holistic perspective on IT related organisational change and –development. They often find it difficult to convince their superiors of the merit that lies in the application of information systems in their organisation.

In his article "Transforming IT into a value centre", Boyle (2002) identifies four primary objectives of IT executive's, namely:

1. Inculcating value management into IT culture – achieving the maximum business value from the organisation's IT investment.
2. Using IT portfolio management as a communication and investment vehicle – express al activities in business terms.
3. Developing human capital management processes that increase IT employee productivity – taking a proactive, programmatic approach to "ensuring that the right talents and skills are available at the right time and place, at the right cost"
4. Ensuring that core IT processes are singular, understood, consistent and scalable (Boyle, 2002).

The most challenging issues in IT today are not about technology or systems; nor are they about the use of information. They are about the styles and behaviours of many IT professionals (Coghlan, 1996). IT people see themselves as being under stress. However, may business managers believe this is due to their inability to form effective relationships with the business, rather than the inherent stress of the job. The modern organisation is a highly political environment and IT people need to be equipped to deal with the situations that face them.   This will make the IT professionals more credible and influential – it will therefore ensure the organisation more effectively exploits IT for business advantage.

The IT executive is the one high level manager who is involved in all aspects of an organisation, and who has a real "helicopter view" of the organisation and its activities. IT executive's need to think big to figure out how information technology can best support business goals and help the company gain a competitive advantage. The IT executive position should include a broad strategic business outlook, rather than the more traditional project-oriented, daily IT operations role. The value of the IT executive lies more in the demonstration of business and management knowledge than it does in technical knowledge. The list of issues that dominates the IT executive's agenda are:

➢ Management

    Business process redesign, placement of IT within the organisation, keeping business confidence in IT investments, educating management on IT issues.

- Systems

    Replacement of core systems, application maintenance and support, improved productivity presenting data in usable format

- Technical

    Migration to client/server, balancing old platforms with new, flexible platforms, network reliability, automated data centre operations.

- People

    Developing the right people skills for the future, developing and retaining the right people and re-skill of IT staff (Coghlan, 1996).

Steve Schuckenbrock, managing partner of client services at the Feld group, a Dallas based consulting firm that works with companies on developing technology strategies and IT executive leadership, is of the opinion that IT executive's have a remarkable vantage point from which to view the workings of their companies – and from which point to be significant strategic players. He feels that "one of the best parts of being a IT executive is that you can actually see everything happening throughout the supply chain; what a tremendous power base!" (McLenahen, 2002). Furthermore, all IT activities and new IT systems and infrastructure involve change. The high rate of failure of IT projects and the adverse relationship between business and IT is a source of concern for the modern organisation. This is especially true because the modern organisation is increasingly more dependent on the effective and efficient implementation of IT in all areas of the organisation.

Mckendrick (2000) refers to a talk by Ken McGee, Gartner Group vice president and research fellow to IT executives from different organisations found at http://www.findarticles.com stating that IT executives should receive credit for the booming economy and that their role is, and will continue to be, far greater than they may realise. In his words "IT has unleashed the power behind a phenomenal time in the history of mankind. They call the World War II generation the 'greatest generation' – they should call you the greatest generation." Due to the strategic role of IT in organisations, there is increasing interest in interventions aimed at IT professionals and departments. The important role of the IT executive in managing change cannot be

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overestimated. As change lies at the heart of organisational development, it is logical to conclude that the IT executive should possess the whole range of OD skills. This leads to a new profile of the IT manager – away from that of a "technocrat" to a well balanced "hybrid manager" who understands and applies the principles of management/leadership, business and technology.

2.3.5   The IT executive's role in organisational development

When designing trials of interventions to change professional practice in the IT industry, choices have to be made about selection of appropriate practices, development and adaptation of interventions and experimental design.   Interventions requiring the participation of IT professionals in organisational change require a high degree of motivation. The interventions must enable participation of IT staff, without distorting the interventions delivered (Cummings & Worley, 2002). According to Bargsley (2002) a "healthy organisation" is one in which people are generally satisfied with the quality of their work life, i.e. they feel good about going to work. A healthy organisation responds well to the need for change – building a healthy department and also contributing towards a healthy organisation is the task of the IT executive.

Miller, Katz & Gans (1998) of the Kaleel Jamison Consulting Group, Inc. refers to a "worthy organisation" - one that people want to join. Some key characteristics of such a worthy organisation, which the IT manager can help build are:

- ➢ a growing organisation
- ➢ people enjoy ample opportunities for continuous growth and development.
- ➢ a sense of community.
- ➢ guaranteed safety.
- ➢ leaders worthy of respect and followership.
- ➢ people are treated as business partners.
- ➢ communications flow clearly and freely.
- ➢ a clear work agreement.
- ➢ policies, procedures and practices enable all people to do their best work
- ➢ a place where people of your background, nationality or gender can succeed.

➢ employees feel wanted, needed, and valued for their contribution, skills and talents.

➢ a favourable reputation as an organisation.

➢ good pay and benefits.

A number of different aspects of organisational development, in which the IT executive has to play a role, have been identified through intensive literature study. The discussion of these new roles and responsibilities will be followed by a summary of the "new type of skills" required of the IT executive of the 21st century organisation.

2.3.5.1 Change management

Change management is the process, tools and techniques to manage the people-side of business change to achieve the required business outcome, and to realise that business change effectively within the social infrastructure of the workplace.

The study of organisational change is at the core of management, organisational behaviour and organisational development. It can be planned or unplanned, incremental or radical and recurrent or unprecedented. Drastic change can be called transformation and can alter the nature of whole industries and economies beyond recognition. The factors that drive change are

➢ External : new technology, changes in the marketplace, changing customer expectations, competitor activities, quality and standards, government legislation and prevailing political values and economic cycles.

➢ Internal : management philosophy, organisational structure, culture and the systems of power and control.

Change presents both risk and opportunity and therefore people seek, yet fear change. For many employees, organisational change means moving away from the established routines and systems toward an uncertain future. Organisations, and the change managers, must therefore inculcate positive attitudes toward change among employees and create organisations that are ready for change.   This type of organisation is

committed to continually building its competency to respond as needed to a complex and ever-changing environment. What organisations need to do to become "change-ready" can be included in processes for strategic and business planning, organisational and job re-design, cultural change, performance management and management development.

Change programs should be customised for organisations. Change programs that are sold as standardised packages assume wrongly that the program is equally suitable for all organisations and prescribe standardised procedures for implementation. Where the change program fail, it is because one or more of these assumptions is not true for the organisation in question (Appelbaum, 1997).

Implementation of IT projects, especially large projects, is synonymous to management of changes in an organisation, be it for gaining competitive advantage or altering the work culture. An organisation's IT projects are usually a part of wider business process reform involving business systems, organisational structure and people. The impacts of IT projects on organisational activities are immense and can even modify the vision or the organisation. People in an organisation must undergo significant change, learning, adaptation and growth in response to the introduction of information technology. The changes are often drastic and cause intra-organisational tensions.   As such, management of change is a vital process in IT projects compared to other types of projects. An IT executive (IT manager/CIO) is expected to offer a solution that would facilitate change as painlessly as possible and change management is therefore a major challenge to those directing large IT projects. There is a need to understand IT implementation strategies and how these strategies contribute to achieving desired changes in organisations. Realisation of these strategies will help IT executives in contributing positively to the transformation process of the organisation.

For IT projects, the management of change in a sociological context, not only in economic and technological terms, is a prime requirement for success. The project success is determined by customer acceptance of the project. Change management, aimed at achieving customer acceptance of the IT systems is a major challenge for IT executives (Kuruppuarachichi, 2002).

2.3.5.2 Developing individuals

Businesses and organisations have to develop the capacity to continuous change in a highly competitive environment. There are greater demands for performance, global interdependence and fast-paced change. Organisational development continues to intervene first at the organisation level – through corporate campaigns and initiatives such as customer care, Just In Time (JIT), quality and business process reengineering (BPR). The individual is only part of this equation in line with the corporate roll-out. The development of the individual is seen to occur only as a later stage of the process.

Organisational reality is anything but rational and ordered. It is a world dominated by self-interest, competing coalitions and conflicting goals. According to Harvey and Butcher (1998) organisational development takes the form of "pockets of good practice" created by individual initiatives, which serve as models for others in the organisation. The success of organisational development therefore ultimately rests on individual action. Individual development should be the starting point of organisational development. It is the extent to which individual development is effective, which determines the success of top-down organisational development. Such individual development should become the starting point of organisational development.

IT executives can play a role in developing individuals. For this they need to know and believe that
> ➢ individuals can make a difference
> ➢ individuals should take more responsibility, become more visible and increase the scope of their contributions
> ➢ the success of teams rests on the ability of individuals to create synergy
> ➢ when individuals take on a wider range of roles and responsibilities simultaneously in a number of teams, the development of individual team membership skills becomes more relevant than specific team development

Managers have to create an enabling context for performance. They must "fight their corners" to create protected space for others and to manage the political dimensions of

initiatives and projects (Harvey & Butcher, 1998). Individual development requires making an important distinction between education and training on the one hand, and development on the other. Education and training are primarily focused on the acquisition of new knowledge and skills. There are many things that prevent individuals from using their knowledge and skills – lack of confidence, anxiety, unwillingness and confusion. Development incorporates acquiring new knowledge and skills, but it is much more demanding. It involves increasing self-knowledge, "unlearning" past habits, and improving personal abilities that determine how and when knowledge and skills will be used.

In many organisations the individual development process does not receive organisational support. This is due, in part, to the increased pressures of working life: changing roles, heavy workload and time commitments, lack of understanding and skills of line managers. In such organisations successful development is based on personal commitment and perseverance in the face of organisational apathy or even hostility.

The development of individuals should improve personal practice, such as delegating, decision-making and improving working relationships.   These managers will implement change in their organisations, ranging from realigning the culture and values of the organisation and influence attitudes within the organisation. (Harvey & Butcher,1998)

2.3.5.3 Self development

The personal abilities related to managers are:
  ➢ Cognitive skills
      Key thought processes required to read situations and understand and resolve problems and issues.
  ➢ Self-knowledge
      This refers to the capability to see one self as others do. Managers who bring a high level of self-knowledge into a situation are better positioned to use their skills and knowledge flexibly and make better decisions.

➢ Emotional resilience

Self-control and self-discipline, the ability to manage emotions appropriately, coping with pressure and a balanced view of the self.

➢ Personal drive

This refers to personal achievement orientation and motivation.

Research done by Patching & Chatam (1998) found that managers adopt role-oriented behaviours at work, often losing sight of their own values and personality. They tend to act out their role as manager and many managers admit that they are very different at work than at home. Some managers become defined by their work role and they lose the ability to gain self-esteem and a sense of identity from anywhere else than their work and performing their role. In companies where firmness, toughness, decisiveness, logic and impartiality is respected, there is often no place for caring, nurturing, empathy and imagination. During times of radical change and uncertainty in global markets, organisations are increasingly in need of these qualities.

Patching & Chatam (1998) found that one of the areas in which this separation between self and role is most marked in organisations, is in Information Technology. IT executives move to the role of manager through a technical career, which involves working with computers more than humans. The role of the IT executive is technical in nature and they are stereotyped as lacking in flexibility and the ability to work with ambiguity, which characterises organisational politics. They are seen as lacking in business and interpersonal skills and dull and boring as a people.   The stereotype is described as follows:

"They are comfortable with logic, facts and data, but very uncomfortable with ambiguity and unpredictability. Their world is black and white, they are unimaginative and do not think laterally or creatively. They are poor in dealing with moral and ethical dilemmas and avoid making decisions where there are no right and wrong answers. They are perceived as lacking interpersonal skills, such as relationship building, dealing with conflict and networking among their peers and external business contacts. They do not create the "right image" and their dress and posture do not engender business

confidence. They fight the wrong battles, make politically naïve remarks, don't know when to back down and lack empathy for other's feelings or needs."

As a result IT executives are often politically naïve. They perceive political behaviour a manipulative and unscrupulous and therefore avoid it. They have no business knowledge and interest and they often do not seek such development for themselves. Many IT executives are very frustrated and have a short-lived career in IT management. They were crying out for help with the acquisition of political acumen with which to cope with organisational life.

Managers should refocus upon themselves as people and away from their roles as IT executives. Better interpersonal development for senior IT executives will make them more effective at board level and enable businesses to better exploit IT. In their self-development, IT executives would need

> - the willingness and openness to acknowledge the stereotype and its impact on them as individuals.
> - a sense of humour to recognise their own shortcomings.
> - the ability to be comfortable in situations of ambiguity and uncertainty.
> - a willingness to accept that all organisational life is "political" in nature.
> - a willingness to accept levels of responsibility for business success outside their area of accountability.
> - a culture of sincere customer focus within their IT functions.
> - the ability to listen actively, creatively and empathetically to peers, customers and other key stakeholders.
> - communication skills.
> - a sensitivity to the uniqueness of individuals and their different strengths.
> - a team-oriented approach to problem solving.
> - a capability to learn new lessons from old situations.
> - the subtle art of leadership.
> - conflict handling styles to deal with different situations in appropriate ways.
> - a set of mutually compatible visions for themselves, their families, friends, their IT functions and their organisation.

The most challenging issues in IT today are not about technology or systems, nor is it about the use of information. They are about the style and behaviours of many IT professionals.

2.3.5.4 Motivating and empowering others

Apathy, or a lack of motivation is caused by frustration and feelings of powerlessness. People must feel they control their own destiny if they are to be part of a change effort, provide excellent service or take risks. Employees should be included in decisions, which affect them and the business as a whole. They must be encouraged to consider the wider impact of tasks within the processes. Only by empowering people to achieve exceptional results will this succeed. The key to such empowerment is that IT becomes an integral, rather than peripheral component.

According the Long (1996) many organisations understand empowerment as managers making it clear to their staff what is required, the bounds of authority and the resources are available to complete the task. They believe that managers should be taught the process of delegation and thereafter things will miraculously improve. However, the new and more effective leader will establish the objective, clarify the limits of authority and autonomy and enable individuals to take responsibility for the achievement of the objectives in their area.

A working definition of empowerment, as stated by Long (1996) can be applied to the IT executive as follows: In order to empower their employees, IT managers should build a climate wherein employees at all levels will *want to be* fully involved in, and totally committed to, the successful achievement of the overall corporate goal, thereby developing both the organisational and personal performance/potential.

The important issues to be dealt with in empowering employees and creating an empowering culture are:

Attitude

Obstacles to any form of innovation and change are:

➢ It's not invented here.

➢ They'll do as they're told.

➢ They're only interested in the size of the pay packet.

➢ We've always done it this way.

➢ We've tried it before and it didn't work then.

➢ It's not my job.

Commitment

This should cover two levels, namely:

➢ A sense of duty and obligation to the company and the acceptance of responsibility for the successful achievement of the corporate objectives.

➢ The motivation and determination to achieve a personal goal or maintain a belief.

Involvement

Individuals should be involved in the planning processes appropriate to their ability and status, as well as in the identification, discussion and agreement of personal objectives (Long, 1996).

2.3.5.5 Coaching

Coaching is defined as "a helping relationship between a client and a coach who uses a wide variety of behavioural techniques and methods to help the client achieve a mutually identified set of goals to improve his/her professional performance and personal satisfaction and consequently to improve the effectiveness of the client's organisation within a formally defined coaching agreement."

Many organisations fail to capture the benefits of coaching by seeing it purely as an individual development intervention. The organisational sponsor should evaluate the effectiveness of the coaching intervention and focus on the learning the coach gains about the organisation, to the benefit of the organisation, the business and its people.

External coaching is perceived to be an effective development tool and is valued for its capacity to enable managers and executives to learn and develop, and thereby to enhance their personal and organisational effectiveness.

Rider (2002) questions whether the person-centred nature of the majority of coaching contracts best serves the needs of the organisation. Organisations see coaching in terms of individual development with organisational benefits. However, coaches learn too and this learning has the capacity to add real strategic value to the coaching intervention. The information that coaches gain about an organisation is rich with details and has the potential to form the basis of a detailed organisational diagnostic. A proper diagnosis leads to effective problem identification, which in turn leads to interventions targeted at the cause, not the symptoms of the problem. An analysis of organisational data obtained from the coaching process is a valuable addition to the diagnostic phase. As a result, it can actually trigger organisational level intervention. (Rider, 2002)

2.3.5.6 Job design and work setting

Job design refers to the process by which IT managers design individual job tasks and authority – what employees are expected to do. On the one hand, jobs can be sources of psychological and physiological stress. On the other hand it can provide income, meaningful life experiences, self-esteem from others, regulation of our lives and association with others. Thus, the well being of organisations and people relates to how well management design jobs.

Robertson argues that the behaviour of organisational members is influenced to a large extent by characteristics of their work settings. Since individuals must change their behaviour in order for organisational improvement to occur, planned organisational change can be viewed as an attempt to change organisational work setting characteristics, such that individuals will adopt new, desirable behaviours.

A prominent theme in organisational analysis is the design of systems, which will generate predictable and constructive participant behaviours and attitudes. Organisational behaviour patterns can be shaped in desired directions through careful design of the organisational work setting. Since an organisation's performance is a function of the aggregate behaviour of its members, organisational improvement can occur only when members' behaviour changes. Thus the process of planned organisational change requires a wide variety of organisation members to agree to behave differently.   Previously, behaviours measured in planned organisational change research have typically been outcome behaviours such as turnover, absenteeism and grievances. Specific on-the-job behaviours are significant determinants of organisational effectiveness and the focus should therefore be on the links between organisational characteristics and participant work behaviour. Work setting characteristics that that are commonly the focus of planned change intervention activity and are expected to be positively related to the frequency of work style behaviours are

- ➢ The work goals of the individual's work group
- ➢ The behaviour of the individual's immediate manager
- ➢ The design of the individual's job (Robertson, 1994)

2.3.5.7 Job enrichment

Job enrichment is a career development program for employees who wish to expand their skills by learning different job duties, including cross training to learn new skills and job rotation to perform new tasks in another position. It is a good way for employees to add variety to their work, to add new challenges to their jobs and to try out new skills for future career development.

The advantages of implementing job enrichment for the IT executive are:

- ➢ More flexibility in staffing.
- ➢ The opportunity to increase staffing levels during peak times.
- ➢ Development of current staff for meeting future goals.
- ➢ High performers remain committed to their jobs.

➢ High performers can be rewarded for completing career development activities through merit pay increases.

➢ Employees have the opportunity to demonstrate knowledge, skills and abilities needed for future advancement.

➢ Bridges can be built to other departments, which create and reinforce interdepartmental cooperation (Mckendrick, 2000).

2.3.5.8 Succession planning

The high turnover in the IT industry turns succession planning into an important focus are for the IT executive. When somebody leaves a company, the experience acquired at the company's considerable expense literally walks out the door and the company has to replace the individual, often from the outside. The company will then have to induct the new individual from scratch. Research has shown that it can take 12 months – and often even longer – for a new employee to become productive. Lack of continuity has an insidious effect on productivity and competitiveness and has to be carefully managed by the IT executive. If high levels of employee mobility and job disruption are unavoidable (as it often the case in the IT industry) the effects on productivity and competitiveness must be minimised. One example of doing this is the skilful employment of oral interviews – sometimes called "exit interviews" – as part of succession management. An exiting employee is a repository of all the experiences acquired over the period of tenure and passing on these experiences provides a powerful management tool to induct a successor quickly, efficiently and cost-effectively into the new job and the new company. To conduct such interviews requires a keen understanding of management issues, human resources and corporate culture   (O'Connor & Smallman, 1995).

2.3.5.9 Organisational learning

Kitchen (2002) quotes Stewart in saying "you would be hard pressed to find a single industry, a single company, a single organisation of any kind, that has not become more "knowledge intensive", dependent on knowledge as a source of what attracts customers and clients". Knowledge is an important resource and the knowledge worker is an important asset. The management challenge is therefore to enable workers to co-operate and co-ordinate their activities to use their knowledge productively. The IT industry is clearly a highly knowledge-intensive environment, and an important responsibility of IT executives is therefore to manage the knowledge and develop the knowledge workers in their organisation, towards creating a learning organisation.

IT executives should be educated to be involved in OD interventions. Many of them still see training as the answer to their problems. As they learn more about OD they will see that many of the organisation's problems cannot be resolved simply by training. Training should be positioned in the total system and should support OD processes.

2.3.5.10 Communication

IT executives who are focused on retaining a happy, effective workforce have to think about how they communicate with employees through what is called "internal communications". This means that they must take cognisance of what employees
- ➢ Must know (key job-specific information)
- ➢ Should know (essential organisational information)
- ➢ Could know (office gossip)

Kitchen (2002) argues that internal communication is so entwined with the process of organising and with organisational structure, environment, power and culture that organisations would probably not exist without communications. For instance, good and immediate communication in a large company can help stop rumours about IT that may damage a project or long-term goals.

Internal communications contribute to the successful implementation of change management programs. Organisations, and the people involved in managing change should realise the importance of good internal communications and make the link between "what gets said" and "what gets done" (Kitchen & Daly, 2002).

2.3.5.11 Culture change

Organisational culture can loosely be defined as the shared assumptions, beliefs and "normal behaviours" of a group. Changing culture is not easy and takes a lot of time and effort. Research done by Cormack et al (1999) to investigate the influence of the culture of the IT department on the relationship between IT and business, indicated that management can improve the relationship by changing the culture. The culture of an organisation can be understood by examining six elements, namely

- Organisation structure

    Who the IT executive reports to in the organisational structure

- Stories and myths

    Success and horror stories told in the organisation about the IT department

- Symbols

    Characteristics of the IT department

- Rituals and routines

    The standards and procedures that the IT department introduces to the organisation

- Control systems

    Who controls the activities of the IT group?

- Power structure

    Who has power and what type of power is it?

Recent research has moved towards the human element of IT and the cultural differences between business and IT groups. (Cormack, 1999) The study by Cormack showed that cultural characteristics associated with a healthy Business-IT relationship are:

- A direct reporting relationship between IT director and CEO.
- Success stories.

> ➢ Technical ability of IT professionals.

> ➢ Decentralised IT structure.

> ➢ IT expenditure controlled by the business.

2.3.5.12 Interpersonal relationship management

In modern organisations there is a strategic imperative to build intra-organisational partnerships and extra-organisational partnerships. Intra-organisational partnerships could be the relationships among IS and business managers. Extra-organisational partnerships enable the firm to implement value added relationships with customers, suppliers and other business partners. In the information age we live in today, it is vital that the IT employees work effectively with the rest of the business (Cormack, 1999; Stewart, 2000).

There may well be academic definitions of quality and success in IT, but in the end it is the business's opinion that counts. Being successful in IT means preparing for, and adjusting to, a highly variable future. A chief information officer (IT executive) must be a "cubist executive". The IT executive must manage satisfaction from multiple perspectives at once in a way that other executives do not.   The IT executive must deliver satisfaction to

> ➢ The CEO and the board of directors

> ➢ Other internal executives or peers

> ➢ IT management and staff

> ➢ External consultants, vendors, service providers

> ➢ External auditors

> ➢ Customers and suppliers

> ➢ Press and gurus

According to Dickson (2000) organisations are confronted with two problems, namely

> 1. How to attract, retain and motivate professionals with valued and scarce IT skills

> 2. How to leverage these skilled individuals

As a solution to the problems, many organisations are pulling human relations management back into the IT unit. This does not replace the HR department, but is responsible for collaborating with the corporate HR department to manage relationships with- and amongst IT employees.

According to Manthey (1994) effective interpersonal relationships are based on three components :

1. Open communication – people talk to each other directly, instead of behind each other's back and positive feedback is generously provided. It involves learning how to say things about work situations in a way that is helpful, constructive and tactful. Effective co-worker communication skills are necessary tools that enable individuals to manage their own responses to situations and events in the workplace.

2. Functional trust – often defined as "the level of trust one has for the bus driver". We need to trust our co-workers to do the work they are supposed to do.   Mistrust is dysfunctional and will damage the esprit de corps. Any relationship depends on a certain degree of trust between the parties. "Trust is at the heart of a healthy relationship.

3. Mutual respect – each member of a team should be seen as equally important to the overall functioning of the team and needs to be equally valued for that contribution. Al humans have an equal need for respect, regardless of education level, financial worth, or social status. According to Manthey (1994) "a workplace that allows disrespectful behaviour towards any individual worker is setting the stage for serious interpersonal conflict".

2.3.5.13 Managing and developing cultural diversity

In a multi-cultural organisation, characterised by cultural diversity, barriers may exist to harmonious cross-cultural relations. Examples of such barriers are

➢ perceptions and discrimination.

➢ enthnocentrism – most cultures consider themselves to be the centre of the world.

➢ inter-group, rather than interpersonal relationships.

➢ stereotyping (DuBrin,2002).

If South African companies are to succeed, they must recognise the emergence of the diversified workforce and "find a way to harness its energies, talents and differences for tomorrow's challenges". The major groups that introduce diversity into the workforce are ethnic groups, women, young workers, workers with disabilities and workers with different sexual/affection orientation. The ability to recruit, select and manage a diverse workforce is necessary for organisational survival.   (Statistics South Africa : www.statssa.gov.za).

To have successful interpersonal relations, employees must be flexible and adapt to other people's way of behaving. Interpersonal relations, rather than inter-group relations is the key to success. In inter-group relations, attention is paid only to the group membership of the person. In interpersonal relations, attention is paid to a person's characteristics. This requires more effort, because we have to attend to details about the other person. Perceptions and stereotyping are especially detrimental to healthy relationships. (DuBrin, 2002)

2.3.5.14 Strategic interventions

During the past few years the role of the CIO in many companies have changed dramatically. The IT executive is no longer "the geek in the basement" who keeps computer systems up and running", but is more likely to be a business-savvy strategic player who, in addition to information technology, is involved with planning, product development and sales and marketing. According to Patricia Cusick, the CIO of Xerox Corp. it is imperative that IT executives understand the strategy of the business and be a partner in setting strategy. In her own words "CIO's will not be able to align with company strategy unless they understand it. And they will not understand it unless they are part of the business team. That means being invited to meetings to make sure they are fully privy to what is trying to be accomplished, being involved in sales-support efforts and talking with customers to see what some of their needs are."   (McClenahen, 2002)

The IT executive of today has to be highly visible and in regular contact with key members of the business, holding discussions about the needs of the organisation, planning for the future, setting expectations, showing value and demonstrating Return on Investment for existing projects. They cannot be credible if the business leaders that rely on IT view them as outsiders. Thus the involvement of the IT executive in strategic planning is important.

2.3.6   New skills required of IT executives for their OD role

Cummings & Worley (2001) included an extensive list of the foundation competencies and core competencies of people specialising in OD as a profession. Gaining competence in all those areas may take considerable time and effort and according to them it is questionable whether the other two types of OD practitioners – managers and specialists in related fields – all need that full range of skills and knowledge. The suggested subset of these skills and knowledge, which should apply to all OD practitioners to be effective are as follows:

- ➢ Intra-personal skills
  This includes the ability to inquire into one's self, which "remains one of the cornerstone skills in OD". Practitioners should know their own values, feelings and purposes and have the integrity to behave responsibly in a helping relationship with others.

- ➢ Interpersonal skills
  Practitioners must create and maintain effective relationships with individuals and groups within the organisation and help them gain the competence necessary to solve their own problems. Foundation knowledge includes group dynamics, comparative cultural perspectives and business functions, while core skills are managing the consulting process and facilitation. Good relationships require listening to member's perceptions and feelings to gain the understanding necessary for joint diagnosis and problem solving. Practitioners must establish trust and rapport with organisational members to enable effective cooperation.

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Practitioners must serve as role models of what is expected. They must provide counselling and coaching necessary to develop and change. They need to negotiate an acceptable role and manage changing expectations and demands.

➢ General consultation skills

OD practitioners need to know how to carry out an effective diagnosis by helping organisation members ask the right questions and collect and analyse information. They should also know how to design and execute an intervention, tailored to the situation.

➢ Organisation development theory

Practitioners should know and apply the basic OD theories and understand their role in the field of OD. (Cummings & Worley, 2001)

To meet the new information processing needs of the new organisation, IS/IT executives and their staff therefore need to develop new skills, so that they may be more focused on the business rather than on technical skills. Managing the corporate IS/IT function is increasingly complex. In adopting a strategic orientation, IT executives have to coordinate with business unit executives from a variety of backgrounds such as law, finance, marketing and sciences. There exists a strong need for versatility among IT/IS managers in order to integrate systems applications well with business strategy. However, some argue that IT has created a breed of managers who have lost the art of human interaction and who immerses themselves in information based technologies, rather than focusing on the value that information can provide for clients. An IT paradigm shift away from a focus on technical skills has created different job descriptions for IS/IT executives, which requires them to acquire new knowledge and skills. They will need to be multi-faceted, multi-skilled individuals, who possess a combination of interpersonal, technical and business skills that will allow them to analyse problems, integrate applications and implement new business processes built around information technology (Patching&Chatham, 1998).

O'Conner & Smallman (1995) refers to a recent study by Price Waterhouse, where it was found that the three key issues facing IT directors are

- ➤ integrating IT with the business.
- ➤ delivery on time and within budget.
- ➤ cost.

According to them the reasons why so many software development projects fail to satisfy user requirements and are delivered late and over budget, are two-fold : management are reluctant to acquire an appreciation of IT needs and potential IT specialists fail to understand what the business wants. Worse still – they seldom contribute to future strategy.

There is a growing belief that the real problems facing IT departments are neither technical nor fiscal, but organisational and managerial. O'Conner & Smallman (1995) also comments that successful projects focus on business benefits, rather than technological considerations. Factors such as clear objectives, top level commitment, fully detailed and agreed specifications and good project controls are all important. However, the overriding concern must be that of meeting the needs of the business.

Meiklejohn was the first to refer to the "hybrid manager" – an individual who combines business understanding, technical competence and organisational knowledge and skills to integrate IT with business better. According to O'Conner & Smallman (1995) hybrid managers bring the following benefits:

- ➤ Improved internal communications.
- ➤ Bridging of cultural and political gaps within organisations.
- ➤ Promotion of a better understanding of and more effective use of systems.
- ➤ Encouragement for a proactive attitude to change.

The overlap of these benefits with those of organisational development indicates that the hybrid manager can play an important role in organisational development. It is important to note that the hybrid manager is a concept, a capacity for a role, a management

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development goal, a style; it is not necessarily a job title or a description and will not be found on an organisational chart. Typical characteristics of the hybrid manager include:

- ➤ Self-motivated.
- ➤ Intelligent in the broad sense (having good conceptual skills).
- ➤ Comfortable with ambiguity.
- ➤ Able to cope with conflict.
- ➤ Flexible.
- ➤ Energetic and persistent.
- ➤ Good communication and team-working skills.

Unfortunately the training and development provided to IT executives currently do not fit them well for this role. The skills of the IT executive of the future will therefore be very different – technology will no longer be considered critical. The required skills will be:

- ➤ Vision builder.
- ➤ Team player.
- ➤ Alliance builder.
- ➤ Tactician.
- ➤ Deliverer.

 (O'Connor&Smallman,1995).

Chapter 3   Research methodology and research methods

3.1   Research methodology

When the research design for the project had to be selected, the researcher considered the following:

> ➢ How will the design connect to the paradigm being used?
>
> ➢ Who or what will be studied?
>
> ➢ What strategies of enquiry will be used?
>
> ➢ What methods or research tools will be used for collecting and analysing empirical materials?

Qualitative research strives to understand the perspective of participants or a situation by looking at firsthand experience to provide meaningful data.   It emphasises exploration, understanding, contextualisation, introspection and theory construction (Jacobs, 2002). It is conducted through an "intense and/or prolonged contact with a field or life situation" (Miles,1994). On the other hand, quantitative design strives to control bias so that facts, instances and phenomena can be understood in an objective way. It can provide an overview of an area to reveal patterns and inconsistencies that can be further investigated with qualitative methods (Jacobs, 2002).

According to Falconer and Mackay (1999) early IS research was predominantly quantitative in nature, conforming to the positivist epistemology. There are benefits for IS researchers to adopt positivist research methods. It is invariably easier to undertake and consumes less time to produce results than interpretive research. There is also a wide acceptance among editors and readers of the relevance of their methods. Interpretive researchers often have to offer extensive defences of their methods – positivists often refer to it as "alternative" research, which is subordinate or supportive to positivist research.   However, the shortcoming of quantitative research on its own is that it

"neglects aspects of cultural environment in social interaction and negotiation" that could affect the outcomes of the study (Falconer & Mackay, 1999).

There has been a general shift in IS/IT research away from technological to managerial and organisational issues, which led to an increasing interest in qualitative research. The motivation for doing qualitative research is that, if there is one thing that distinguishes humans from the natural world, it is their ability to talk.   Qualitative research methods are designed to help researchers communicate with– and to "understand people and the social and cultural context within which they live" (Meyers, 2002). Qualitative research therefore cuts across disciplines, fields and subject matter. According to Falconer and Mackay (1999) qualitative researchers study things in it's natural setting, attempting to make sense of, or interpret, phenomena "in terms of the meanings people bring to them". The foundation for successful qualitative analysis is the researcher, as it involves interpretation on the part of the researcher. Such interpretation has to be systematic and must be clearly supported by the data. The researcher therefore wants to get closer to the subject's perspective through detailed interviewing - sometimes observation - and believes that the rich descriptions of the social world are valuable.   According to Schurink (2002) qualitative research is an interdisciplinary field - it is therefore perfectly suited for studying organizational behaviour and relationship issues in the IS/IT field.

Although most researchers do either quantitative or qualitative research, for abovementioned reasons they will be combined in this project.   Denzin and Lincoln (1998) states that "combining different approaches is an important topic in IS research". Falconer and Mackay (1999) supports this statement: "There is agreement among researchers that combining methods within a positivist paradigm is a valid approach to research design". The combination of independent, yet complementary research methods is called triangulation (also referred to as "mixed methods").   The benefits of triangulation are:

> ➢ The methods complement each other
> ➢ The inadequacies of individual methods are minimized

According to Falconer and Mackay (1999) "cross-paradigmatic research designs to investigate a single phenomenon are ill-conceived". According to them, the results of investigations of different phenomena may accumulate to provide rich understandings of complex real-world problems. The researcher hopes to achieve such understanding through this project.

The following attributes of qualitative research were adhered to during this study:

➢ Context

> The researcher studied people (e.g. IT managers, relationship managers, business- and systems analysts) and their environment holistically (as a whole). In some instances, the behaviour was studied in the environment in which it occurs ('in context') namely the workplace.

➢ Descriptive data

> Data were also gathered in the form of words or picture and not only in the form of numbers.   The data contain direct quotations from people about their experiences, beliefs and thoughts (Schurink, 2002).

➢ Process and sequence

> The research was not as concerned with outcomes and products, than with social processes and sequence.   The researcher wanted to know where, how and under what circumstances human meanings are formed.

➢ Inductive

> The researcher constructed a "picture" (framework) that took shape as the pieces were examined and the data collected.

➢ Meaning

> The research wanted to understand people's perspectives, rather than "truth" or "morality" (typical of the post-modernist era).

➢ Internal validity

> The researcher is concerned about intern validity, i.e. great care was taken to capture the participant's perspectives accurately (Schurink, 2002).

Coolican (1999) lists four general purposes of qualitative pieces of research, namely:

- ➢ Descriptive/exploratory.
- ➢ Testing a theory.
- ➢ Generating a theory.
- ➢ Assessing the effect of an intervention.

The largest part of the qualitative research used during this research project was exploratory. The purpose was to start investigating an area and to assess the experiences of a particular group of people – managers and analysts – and to draw relationships between the concepts. Theory is also generated through the design of the framework towards fusion in the business-IT relationship. The qualitative part of the research done in this project was also interpretive – no objective accounting of events and situations was done. A relativist, shared understanding of phenomena was sought, not generalisation to a population. The intent was to gain a deeper understanding of the way the research subjects (Schurink (2002) also calls them "research participants") construe, conceptualise and understand events, concepts and categories.

The main characteristics of the project were that
- ➢ there was a need to discover answers to questions and problems and
- ➢ real world phenomena were investigated.

The organisation or the individual was not "reduced to an isolated variable or to a hypothesis, but is viewed instead as part of a whole" (Schurink, 2002).

There are many ways to analyse qualitative data, but there exists no specifics and precise formulations on how this should be done. The goals of qualitative analysis are the discovery of regularities, patterns and themes and the comprehension of the meaning of text or action. Although there are many ways to undertake the analysis of qualitative data, Schurink (2002) quotes Creswell in saying that it basically involves data reduction, data display, conclusion drawing and verification. He indicates that several reasoning strategies have to be used in analysis of qualitative data. The following strategies were used:

➢ Analysis

> Resolve a complex whole into its parts.

➢ Inductive reasoning

> Discover relationships or patterns only once the data have been generated, by means of inductive abstraction and generalization.

➢ Synthesis

> Construct the whole out of parts by identifying relationships between concepts and categories.

➢ Bracketing

> Suspend preconceived ideas and reconstruct an experience in an open context.

➢ Intuiting

> The researcher focused all awareness and energy on the subject of interest.

The challenges of qualitative data analysis are that

➢ It may be a lot of data.

➢ Data reduction involves reducing the data to meaningful and manageable amounts, accounting for all data and coding/classifying data.

➢ The data collected may vary in its relevance.

➢ There are no simple facts or figures.

➢ There is a need to identify themes/patterns in order to develop the analysis.

In summary, the qualitative part of the project adhered to the characteristics, as worded by Miles (1994). During the project the researcher's role was "to gain a holistic (systemic, encompassing, integrated) overview of the context under study: its logic, its arrangements, its explicit and implicit rules". Furthermore, the research attempts to "capture data on the perceptions of local actors from the inside". The researcher "isolated certain themes and expressions but maintained them in their original form throughout the study". A main task was to "explicate the ways people in particular settings (the business-IT interface and analysis) understand, account for, take action and otherwise manage their day-to-day situations."   More than one interpretation of the material is possible, but it was aimed to report an interpretation that "is more compelling

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for theoretical reasons or on grounds of internal consistency". Relatively little standardised instrumentation was used and the researcher was essentially the "main measurement device" in the study. Most analysis was done with words, which could be "assembled, sub-clustered, broken into semiotic segments and organised to permit the researcher to contrast, compare, analyse and bestow patterns upon them". The words are based on observation, interviews and documents. The data collection methods were carried out in close proximity to a local setting for a sustained period of time (Miles, 1994).

The outcome of the research is a framework for creating business-IT fusion in modern organisations. This framework includes the major reasons for non-fusion, the prerequisites for fusion and the role of analysts and IT executives to address the non-fusion. The framework defines the "big picture" of the interface between the IT/IS function and the rest of the business. Miles (1994) refers to the "richness and holism" of such qualitative data. The reasons for following the framework approach were as follows:

➢ Much research has been done on elements of the business-IT relationship. Some focus on the IT viewpoint, others on the behavioural viewpoint and some approach the topic purely from a management viewpoint. But the researcher could not find a single study that "brought it all together".

➢ As head of the department responsible for training employees to bridge the gap, it is important that the researcher has a clear picture of the issues within the business-IT interface. The framework will identify the important aspects of this interface, which should be covered in the courses.

➢ Such a framework includes aspects from many different disciplines and serves as a starting point for a body of knowledge regarding the business-IT interface.

➢ Identification of the issues will open up many research opportunities and topics in various study areas, for lecturers and students to further their studies and add to the body of knowledge.

➢ The project opens up opportunities for experimenting with collaborative research between staff and senior students. As part of this project the inputs from senior IT

management students were used with success. This framework defines a focus area for follow-up research within the Department

➢ The framework is a dynamic entity. Results from follow-up research can be used to expand and improve the framework. The important factor is that the framework can expand and grow as the issues are investigated in more depth during follow-up research projects.

3.2   Research methods

3.2.1   Introduction

The specific research methods used in the different phases of this project were

➢ in-depth literature study

➢ content analysis of media

➢ surveys

▪ questionnaires based on information found in the literature studies, content analysis and the results of pilot interviews.

▪ personal discussions, interviews and focus groups sessions.

More than one method of collecting employer views were used, rather than relying solely on questionnaires. Orpen (1984) says: "researchers should not impose their questionnaires/ interviews on others, but rather allow the actors themselves to generate the items or questions that are important or relevant to them. According to Hughey (1997) higher education can learn from business and industry and "talking to employers is the most fruitful means of exploring employer perceptions and opinions". Semi-structured interviews and focus groups were therefore conducted and the participants were given a great deal of freedom concerning the topics they wanted to elaborate on. This was done within the boundaries of the sections of the questionnaire, each addressing a specific facet of the research.

The abovementioned research methods were used as follows:

3.2.2   Literature study

3.2.2.1 Working relationships in the IT field

An extensive literature study was done in the first phase of the research project, to provide some background knowledge on the importance and nature of interpersonal working relationships from an organisational behaviour viewpoint (what is needed for healthy relationships?). The relationship stakeholders (e.g. suppliers, vendors, clients, internal departments, managers, consultants, higher education, government) in the IT industry and the types of relationships (internal, external, executive level and lower levels) were studied. The different relationship management roles in the IT industry (relationship manager, business analyst, systems analyst) were also determined.

From the literature the prerequisites for healthy relationships and the various reasons for problems in the business-IT interface were determined and used as a basis for the empirical research (described in 3.2.3). An important part of qualitative data analysis is categorisation. Categories may emerge from the theories or literature used (deductive approach) or from the data (inductive approach).   In this part of the research the deductive approach was used to derive the different categories of business-IT relationship problems from the abovementioned issues. The 25 categories emerging from the literature are included in chapter 4.

3.2.2.2 The expectation gap and adverse business-IT relationship (“non-fusion”)

A literature study was done to identify the factors contributing to the failure of IT in solving the real business needs, as well as possible reasons for the adverse business-IT relationship.

3.2.2.3 Business-IT fusion

An extensive literature study was done on fusion, including issues such as strategic alignment, the difference between strategic alignment and fusion and suggestions on how fusion could be achieved in organisations of the 21st century.

3.2.2.4 The role of managers

The literature study on the business-IT interface showed that IT executives/IT managers/ Chief Information Officers have a responsibility to manage the relationships and creating fusion between business units and the IS/IT function in organisations. It was found that most of the issues discussed in literature related to the responsibility of IT executives to focus on the human element in the organisation. These IT executives cannot deny their responsibility to become involved in the development of the organisation (OD). The follow-up literature study therefore investigated the responsibilities of OD practitioners in detail, from which the OD role of the IT executive towards the development of their organisation and its people could be derived. No empirical research was done to verify the findings from the literature – this will be done in future research projects.

3.2.2.5 Analysis

A literature study was done to investigate the difference between business- and systems analysis, the specific job titles used for analysts and the professional profile required of these professionals.

3.2.3   Empirical research

3.2.3.1 The business-IT relationship

These factors influencing the business-IT relationship were used to design a questionnaire to determine the significance of each of these factors. The questionnaire was completed by IT managers and business managers / experts in randomly selected companies in Gauteng, South Africa. The questionnaire was followed by personal interviews where participants could elaborate on the issues in the business-IT relationship and their view of the term fusion, as applied to this relationship.

3.2.3.2 The role of analysts

Content analysis of literature, job descriptions and job advertisements of analysts was done to determine the roles and responsibilities of analysts and the profile of skills, knowledge and attributes required of business- and systems analysts in South African organisations.

The results of the content analysis were used as the basis for an online questionnaire, designed to verify the roles and responsibilities of business- and/or systems analysis, as well as the required professional- and personal profile of these employees. Personal interviews and focus group meetings were conducted with analysts to determine the organisational behaviour issues faced by business and systems analysts and the soft skills required to handle these situations.

3.2.4   Discussion of the research methods

3.2.4.1 Content analysis

Coolican (1999) describes content analysis as a way in which qualitative data is collected, only to be later converted to quantitative data. For example, interview transcripts; essays, books and verbal protocols can be studied to produce a series of categories, which are relevant to the research question. According to Berelson (1952) content analysis is "a research method for the objective, systematic and quantitative description of the manifest content of communication".   It measures the semantic content (the "what" aspect) of a message (Cooper, 2001).   The purpose of content analysis is therefore to provide a descriptive account of what a media text contains, and to do so in a fashion that can be reproduced by others (Gunter, 2000). Gunter quotes Walizer and Wiener in saying that "content analysis is any systematic procedure devised to examine the content of recorded information".

Many skills, knowledge and attributes of the business- and/or systems analyst are described in journal articles, job advertisements and courses presented by higher education institutions. In this part of the study content analysis was used to analyse a sample of job advertisements and job descriptions of business and systems analysts to provide baseline information about their relationship roles, the required attributes and abilities of each of these job descriptions. Relevant key words and key sentences describing specific qualifications and responsibilities were collected from each entry. These key words reveal important aspects of the position. This part of the research

therefore aimed towards producing an unambiguous description of the skills, knowledge and attributes required of business and systems analysts.

In accordance to Wimmer and Dominick (1994) the steps that were followed in the content analysis are:

Step 1 : Formulate the research question

What are the most important knowledge, skills and personal attributes of analysts with reference to their role and responsibilities, required technical knowledge and skills, non-technical knowledge and skills as well as personal attributes.

Step 2 : Define the population

The population had to be isolated to be consistent with the problem question. Furthermore it had to be defined narrowly enough to permit gathering "manageable types of information" (Reinard, 1998). The primary data sources were unpublished data and data gathered by researchers from the people or organisation directly. The primary data source used during this study consisted of existing IT practitioners in relationship roles. Secondary sources were materials like books, articles, newspaper clips, et cetera, which have previously been published. These were used for the content analysis, to derive a representative profile of required knowledge, skills and attributes.

Step 3 : Select the sample

The purpose of the sampling process was to obtain a representative sample of job advertisements and job descriptions to see what they reveal. The sample had to be large enough to permit meaningful conclusions to be drawn.   A random number of Internet and newspaper (*The Sunday Times*) job advertisements, job descriptions found in journals and obtained from a number of companies and recruitment agencies, as well as higher education institutions and training companies were used in the analysis. Approximately 30 sources of information were used to do the content analysis. Comments made during personal interviews with important clients of the academic institution are included in the analysis. These clients include members of the Advisory Committees, employers of

Technikon students for the Cooperative Training period and personnel agencies.   A manageable group selected from each of the sources was selected for analysis.

Step 4 : Define the unit of analysis

According to Krippendorf (1980) content analysis has five kinds of units to study, namely

1. A physical unit (e.g. number of pages)
2. A syntactic unit (e.g.number of words, phrases or sentences)
3. A referential unit (e.g. presence or absence of objects)
4. A prepositional unit (e.g. statements or argument units)
5. A thematic unit (e.g. repeating patterns of ideas)

Relevant key words and key sentences describing specific roles, responsibilities, and requirements of the relationship manager were collected from each source.

Step 5 : Construct categories

The key words and sentences reveal important aspects of the position announced and were sorted into three groups/subtexts, namely the role, responsibilities and skills required (technical, non-technical and personal attributes).

Step 6 : Establish a quantification system

Since job announcements use different wordings to describe the same qualifications or job responsibilities, the term more often used or a generic term were selected. For example the phrases *extract business needs* and *gather user requirements* were regarded as the same and coded as *determine business needs*. However, care was taken not to narrow the functions into a few single terms, but to provide adequate room when the description of a responsibility or requirement did not mean exactly the same thing. For example "the ability to communicate effectively" and "the ability to communicate with IT specialists" were used separately, as one implies general communication skills (such as presentation skills) and the other means having the technical know-how and vocabulary to effectively communicate with technical specialists.

Step 7 : Train coders

No external coders were used to facilitate consistency throughout the process.

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Step 8 : Code content

This process could have been computerized through available content analysis software such as VBPro, but in this case the researcher did everything by hand. The tabulation of the data was done using MS Excel, to perform some descriptive statistics. If a skill is mentioned more than once in the same source, it was coded only once. Related skills were grouped, for example *Peoplesoft, SAP* and *Oracle ERP* were grouped under *ERP software*.

Step 9 : Analyse collected data

The quantitative results are reported in table format. Simple descriptive statistics can tell many of the stories in the data. The data gathered were analysed to derive a representative profile of the relationship manager.

Step 10 : Draw conclusions

A report was generated, indicating the profile of the relationship manager. After identifying the role, responsibilities and the required skills, a representative profile was derived. This represents the knowledge and skills in which BTech(IT) : Business Applications graduates have to be trained.

3.2.4.2 Questionnaires

Questionnaire 1: Business-IT relationships

This part of the research necessitated the design of a questionnaire to be used as the basis in follow-up personal interviews. The questionnaire contained all the relevant issues - identified by literature - and grouped into 25 categories. Both IT- and business managers from companies in the Gauteng region of South Africa were requested to complete the questionnaire. The purpose of the questionnaire was to determine the perceptions of business and IT managers of the reasons for IT project failure and relationship problems in their organisation. No distinction was made between large, medium and small organisations, or between different sectors. The results were used only to rank the most

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important issues according to the two types of managers. The respondents were asked to indicate the significance of the respective relationship issues. The options were

> Very significant
>
> Significant
>
> Unsure
>
> Not significant
>
> Not significant at all

The questionnaire is included as appendix 4.

The results from the literature study on the adverse business-IT relationship were verified in companies in the Gauteng region of South Africa. The issues, as determined by the literature study, were summarised and categorised. Fourth year students in the IT management (ITA401A) course at Tshwane University of Technology (TUT) were involved in conducting structured interviews with both IT- and business managers in industry. Students were given the opportunity to identify any company with an IT department in Gauteng and set up appointments with professionals in industry. They gained valuable exposure to using structured interviews as a method of gathering information, which will be especially valuable if they become involved in further studies and research projects. Furthermore, it forced students to discuss this important topic with industry representatives and to hear about the nature of the business-IT relationship issues "straight from the horses mouth". Before conducting the interviews they were trained on the contents of the questionnaire, the potential complications of setting up and conducting such interviews and the way the results should be presented to the researcher. After the interviews were completed, the researcher verified the authenticity of the results with the participants.

Questionnaire 2: Business- and systems analysis

For this part of the study an online questionnaire was designed to verify the results of the content analysis of the newspaper- and magazine articles and job adverts of business and systems analysis. This questionnaire included a few open-ended questions where the interviewee could add information as he/she wishes (for example a short working definition of business analysis and systems analysis). This allowed for flexibility and

reduced researcher bias. The questionnaire was pre-tested by sending it to the committee members of the Business- and Systems Analyst Special Interest Group to complete. Their suggestions and changes were subsequently made.

The questions in the online questionnaire did not refer to job titles (e.g. business analyst) at all, but only the activity (e.g. business analysis) to eliminate the bias due to companies using titles differently. Respondents therefore had to indicate whether they are responsible for business analysis, systems analysis or both before indicating what responsibilities, skills, knowledge and attributes are expected of them in their jobs.

An email message with the relevant Internet address where the questionnaire can be located was sent to prospective participants. Invitations to complete the questionnaire were sent to
i) IT employees who are members of the Computer Society of South Africa (CSSA)
ii) Members of the Special Interest Group for business- and systems analysts
(BASA SIG), running under the auspices of the CSSA.
The questionnaires included a few open-ended questions where the interviewee could add information as he/she wishes. This allows flexibility and reduces researcher bias.

A five point Likert scale was used where the support of the statements made had to be determined. Possible options were

> Strongly agree
> Agree
> Unsure
> Disagree
> Strongly disagree

These interval variables allow for perceptions that are based on strong opinions (strongly agree/disagree). The unsure option was included, as some respondents may not know the answers to some of the questions regarding analysis. Respondents were urged not to select this option without thinking carefully about the question.

The respondents were asked to indicate the focus of their business, the type of service they provide (in-house versus outsourcing) the department they work in and what they regard as their major responsibility regarding analysis (business analysis versus systems analysis). These results will be used to determine if there is a difference in the answers of respondents from different backgrounds. The job titles supplied by respondents would give us an indication whether there is a link between the title of the job and the responsibility. It will also indicate the variety of titles used for analysts. Personal details such as academic qualifications were used to determine the viewpoints of graduates and non-graduates, especially concerning training needs and required skills and knowledge as perceived by the individual. Personal- and company contact details will be used in follow-up studies. A copy of the online questionnaire is included as appendix 7. The invitation to participate is included as appendix 8.

There are many challenges and potential complications in the design of online questionnaires, but also many advantages to obtaining the results this way:

Advantages:
- ➢ A lot of paperwork was eliminated and the researcher did not have to rely on the slow and unreliable mailing system for distribution of questionnaires.
- ➢ The method of inviting participants is uncomplicated. The email message that was sent to potential participants could be used to explain the purpose of the survey and the expectations of the researcher. A copy of this message is included in appendix 5.
- ➢ The respondents could complete the questionnaire one section at a time and return to it at a convenient time. Each respondent chose a unique ID code, which was used to resume answering the questions of a partially completed questionnaire.
- ➢ The researcher has insight into the number of people who have completed the survey throughout the process.
- ➢ Follow-up requests ("reminders") to complete the questionnaire could be sent to people who haven't started completing the questions, before the deadline for completion had expired.

➢ The interim results indicate the percentage of the questionnaire completed by each respondent. People who started answering the questions – thereby showing interest in the topic - but who have not completed the whole questionnaire could be contacted (via their email address) and encouraged to complete the outstanding part(s).

➢ No capturing of data by hand is necessary. The results are available in Excel format, ready for statistical analysis. The results can be displayed, one section at a time, or as a whole.

Problems:

➢ People without Internet access could not take part in the survey. In the ICT industry these cases are limited. Only one company asked that the questionnaire be made available in MS Excel format. The researcher captured these responses directly on the online system, to ensure that it is included in the final data for analysis purposes.

➢ There are a few restrictions in the software, e.g. the number of options allowed in a drop-down list. Where the Likert scale is used with five or seven possible options (e.g. from 'not significant al all' to 'very significant') as the question is asked followed by the options on a separate line. This wastes space and increases the length of the questionnaire significantly.

➢ It takes longer to enter the questions into the online survey software than onto MS-Excel or MS-Word. The reason for the time consuming process, was that questions could not be inserted and deleted without having to consciously move the remaining questions. On request of the researcher, significant changes have been made to the software, to simplify the set-up process.

➢ The MS-Excel format of the results was not 100% fit for analysis with SAS (the package used by the Statistical Support Section of Tshwane University of Technology (TUT)), but the conversion to the correct format was easy and quick to do.

3.2.5 Qualitative methods

3.2.5.1 Personal interviews

In the qualitative part of the project personal interviews were conducted with IT managers, business managers, business- and systems analysts. Qualitative research was especially used during the pilot study, where the importance of the research, as well as the topics and issues that need to be researched, were determined.

In such cases the research participants were interviewed in their 'habitat' or natural setting and they were allowed to state their needs in an unobtrusive way, with no manipulation from the researcher. They were allowed space for participation in the design and execution of the project. The relationship between the researcher/research assistant and the subject was intentionally interactive and the primary data were words and sometimes numbers, based on the enumeration of comments made by interviewees. In these cases, the researcher became an observer as well as a participant. Interviews and discussions were taped and the analysis of data was based on the data and comments retrieved during the interviews, which makes this part of the study completely qualitative, even in the traditional sense.

The inductive approach was followed, i.e. part of the study will be used to learn what the important questions are. The researcher was open for the unforeseen, willing to change the focus of the study or abandon certain questions at any time during the execution of the study. The study of the organizational behaviour issues faced by the IT professional cannot be demarcated into well-planned consecutive phases - it can be referred to as 'cyclical', as indicated by Schurink (2002).

The researcher aimed only to learn how the subjects define their situation and make sense out of their circumstances (first-order interpretation). The researcher was sensitive to internal validity and to ensure that she captured the research participant's own way of interpreting significance as accurately as possible. A variety of data sources were used in this qualitative study and it was collected as open-ended narrative without pre-determined

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or standardized categories. The data was primarily captured as interview transcripts and participant observation field notes. The field notes were a written account of what was heard, experienced, seen and thought during the course of the interviews. The field notes served as a backup in case the tape recorder fails and were captured in electronic document format as soon after the interview as possible. Any other significant documents, such as memo's, minutes form meetings, email messages and other official documents, were also used.

The purpose of the data analysis in this part of the research project was to make sense of the narrative data and derive a complete picture of the relationship issues facing the business systems analyst and how they address these issues in their working environment. In the process of making sense of the narrative data, the researcher pointed out that the specific analysis is only one way it can be done – others can adopt and modify it according to their own needs and ideas.

It should be clearly stated that the researcher's personal interest did not bias the studies. The researcher set out to discover the relationship issues facing the IT professional, not to prove a preconceived idea. The researcher does not personally gain in any way from specific outcomes, and was therefore objective in the study. The researcher was excited about finding out more about the working world of the analyst and manager (in the part of "relationship manager"), with the purpose of more effectively preparing students for such a career. Therefore, the preparation did not focus on technical knowledge and skills, but more on business and the important 'people issues' that they have to deal with.

3.2.5.2 Focus groups

The focus group technique is a method of interviewing that involves more than one interviewee. In focus group questioning there is an "emphasis on a particular, fairly tightly defined topic and the accent is upon interaction within the group and the joint construction of meaning" (Bryman, 2001).   It is a qualitative research method where the researcher is explicitly concerned to reveal how the group participants view the issues with which they are confronted. Focus groups are usually chosen as a research method,

because it allows participants to stimulate each other's thoughts on the topic through discussion, supporting and contradicting each other's viewpoints. .

In general, the advantages of focus group sessions are that participants could bring to the fore issues in relation to a topic, which they regarded as important and significant. The technique allowed the researcher to develop an understanding about why people feel the way they do and people were allowed to probe each other's reasons for holding a certain view. Individuals will often argue with each other and challenge each other's views. They sometimes also hear opinions that they probably would not have thought of. The researcher could end up with a more realistic account of what people think. The researcher plays the role of the facilitator, guides the sessions, without being too structured or intrusive.

The qualitative nature of a focus groups discussion therefore allows a researcher to get behind the meaning of the skills, competencies and abilities to explore what they involve in practice. The ideal group size is between six and ten members. Interviews and discussions are taped and the analysis of data is based on the data and comments retrieved during the interviews, which makes this part of any study completely qualitative, even in the traditional sense

The limitations of focus groups are:
- ➢ The researcher has less control over proceedings than with individual interview.
- ➢ The data are difficult to analyse
- ➢ Focus groups are difficult to organise, as people have to turn up at a specific time and place.
- ➢ The recordings are time-consuming to transcribe
- ➢ The viewpoints of all participants have to be extracted, not only the ones that "hog the stage".

3.2.5.3 Business- and systems analysis

An important focus area of the qualitative study was the role of the business- and systems analyst in managing the soft issues (also referred to as "people issues" or "organisational behaviour issues") during his/her liaison role between the technical expert and the business. A complete picture of the social and people issues facing the business- and systems analyst could only be derived through close personal contact with them. The issues that arise and the way in which the relationship manager is expected to handle these situations were built into the contents of the training program. The qualitative nature of the interviews and focus groups allowed the researcher to get behind the meaning of the skills, competencies and abilities to explore what they involve in practice.

During this research project two personal interviews and two focus group sessions, each with 6 business- and systems analysts were held with the specific purpose of determining the people issues they face in their jobs. In the focus group session, business analysts and systems analysts who are known to have experience in these fields were asked about their view on the organisational behaviour issues they have to deal with in their working life, as well as the soft skills necessary to handle these situations. The initial question, to start the conversation, was:

"Business- and systems analysts deal with people and manage relationships. They have to face many human behaviour issues, on the individual-, group- and organizational level."

> ➢ *Discuss practical situations illustrating this statement.*
> ➢ *Which soft skills would such an employee typically need?*

The interviewees and participants were actively brought back to the topic if they started talking about technical and analysis issues. They were reminded to focus on people issues alone.

The focus group method is especially applicable to this topic, as it involves perceptions and personal experiences of the participants. The first session was held during an advisory committee meeting (where the participants are practising analysts, responsible

for giving advice on course contents). The second focus group consisted of the business systems analysts of the IT services department of a university.

The questions for consideration were explained before the start of the session and participants were invited to be honest and speak openly about their perceptions.
All the participants were given the opportunity to speak their minds and to stimulate thoughts in each other. The researcher ensured that everybody gets an opportunity to speak and that the important aspects were elaborated upon. All the participants took part in the discussions actively and valued the opportunity to speak about an important - yet often underestimated and neglected - part of their jobs.
The phases in conducting focus groups were:

1. The researcher introduced the topic to the group
2. The researcher set the rules, for example only one person should speak at a time
3. Each participant made an opening statement regarding his/her experience of the topic
4. The researcher guided the open group discussion by asking questions such as "most people here mentioned Z, but how does that fit in with X?"

The session ended with each person giving a final statement that may not be challenged (based on Welman *et al*., 1994).

Only two focus group sessions were held and it soon became clear that the issues are the same as found in the literature and during personal interviews. The number of focus group sessions can be expanded in follow-up research projects.

Interviews were conducted with two analysts from different companies than that of the focus group members, to supplement the focus group results. The same issues were mentioned during these interview sessions and the results will be discussed in chapter 5..

3.2.5.4 IT project failure and adverse relationships

During the personal interviews with IT and business managers, the issues in the business-IT relationship, as covered in the questionnaire, were discussed. Various comments were

made by the participants, which are used in conjunction with the questionnaire data. The participants were also invited to speak about the strategic alignment in their organisation and whether the IT manager is part of the board of directors and an active part of the decision-making process. The term fusion was also discussed to determine how regularly the term is used in this context.

The results section of qualitative research could be different from that of quantitative research. In the next two chapters the results of the research will be reported and discussed throughout. Interesting findings will be identified and commented on where it is reported.   The researcher will aim to convince the reader that productive, meaningful and valid data have been produced.

Chapter 4   Results: The business-IT relationship

4.1   Results from the literature study

To answer the first research goal, all the reasons for the failure of IT projects and/or the adverse relationship between business and IT that were obtained from the literature study have been grouped into 25 categories. The following sections divide the issues (discussed above) into categories and summarises the factors belonging to each category. The categories are all interlinked and are not limited to technical issues, but management and training issues too.

1. The real business need is not understood and documented (ineffective requirement specification)
2. Project scope changes (Changing business needs / technology)
3. Insufficient client expectation management
4. Lack of Communication
5. Poor documentation practices
6. Testing
7. People issues / behavioural issues / cultural issues
8. Adverse interpersonal relationships
9. Lack of business ownership / collaboration
10. Lack of shared goals
11. Negative attitude towards the IS/IT function
12. Lack of strategic alignment
13. Strategic role/involvement of IT manager
14. Skills, attributes and attitudes of IT personnel
15. Lack of shared responsibility
16. Insufficient equipment and infrastructure
17. Lack or senior management involvement
18. Lack of knowledge transfer between IT and the business
19. Different measures of success

20. Management issues: Organisation/business management

21. Management issues: IT management

22. Project specific issues

23. Project management issues

24. Project manager issues

25. Finances

4.2   Survey results

67 IT managers and 48 business managers successfully completed the questionnaire and participated in personal interviews. The data is included as appendix 2, including the names of the companies participating in this part of the research. The answers from the IT managers were compared to that of the business managers, to determine whether the important issues are universal or unique to a certain job. The analysed results will be discussed in this section.

4.2.1 Ranking of all the questions

All the issues in all the categories of the questionnaire were ranked according to the number of respondents who agreed and strongly agreed to each issues. The 20 most important issues and the 12 least important issues (overall) are shown here.

4.2.1.1 IT managers

The 20 most important issues, ranked in descending order of importance are:

1. Business partners and IT professionals do not share responsibility for managing risk

2. Failure to ask the right people the right questions at the right time

3. Business partners and IT professionals do not share responsibility for IT project success

4. While with any IT project failure the IT department must accept some portion of

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that responsibility, too often that portion is too large and too restricted.

5. Lack of knowledge transfer, so that the person in IT gains knowledge of the business issues and can think of IT in the context of the business, and vice versa for business people.

6. Users don't know what they really want

7. Unrealistic project completion date coupled with continually changing requirements

8. Scope creep occurs throughout the project

9. People resist change because they do not want to shift from their comfort zones

10. People are moving in different directions and do not connect and add their energies to each other in bringing about a goal.

11. Work overload, skills shortages in the IT function

12. Business does not recognize that the IT department is more than a cost center or a necessary evil

13. A lack of clear and consistent definition of the problems leads to the development of systems with which users are dissatisfied.

14. Unrealistically high expectations of users in the face of limited resources

15. Some people within organisations are more powerful than others through their positions or connections with powerful people

16. Group members have different perceptions and bias as to what makes a good system

17. IT executives feel they are under huge pressure if their projects are over budget, late, buggy or inadequate to meet their company's business needs.

18. High on-going maintenance for systems

19. The scope of the project is not well-defined, therefore conflict results

20. High expectations of users are caused by vendor's self-serving claims and the glitter of technology. End-users and IS professionals are often misled by the glitter of new technology and vendors' inflated claims – their focus then shifts from problem solving to working with the latest technology and software packages.

The twelve least important issues for IT managers are:

1. The CIO is not a business person first and a technologist second

2. The project managers does not regularly report the status of the project

3. The CIO does not have detailed knowledge of the organisation's operational units and cannot talk at business level

4. IT shortfall – IT fails to support the business strategy

5. Unsuitable working environment

6. Insufficient equipment and infrastructure

7. The CEO does not trust the CIO and does not communicate with him/her frequently

8. The person with the best knowledge of technology, not business, is the CIO

9. Unplanned absence of resources because of breakdowns of equipment

10. The IT teams are too large

11. Team not physically located together

12. There is a bad relationship between the CEO and the CIO

4.2.1.2 Business managers

The 20 most important issues, ranked in descending order of importance are:

1. Business partners and IT professionals do not share responsibility for IT project success

2. Business partners and IT professionals do not share responsibility for managing risk

3. Business unit participants are not full-time members of the project teams

4. There is a difference between the expectations of end users from computer systems and their actual performance.

5. The scope of the project is not well-defined, therefore conflict results

6. Lack of knowledge transfer, so that the person in IT gains knowledge of the business issues and can think of IT in the context of the business, and vice versa for business people.

7. At the heart of the communication problem is the fact that business users understand their business at the business process level, while developers understand it in terms of data structures, etc.

8. People resist change because they do not want to shift from their comfort zones

9. People are moving in different directions and do not connect and add their energies to each other in bringing about a goal.

10. Poor testing – testing fail to catch faults before a system goes live

11. Failure to ask the right people the right questions at the right time

12. Unmanaged expectations – not clearly and frequently communicated to all stakeholders

13. Line-of-business managers and IT professionals approach their daily jobs and new challenges very differently

14. Different goals – group members have different needs and objectives that are not harmonized

15. A lack of clear and consistent definition of the problems leads to the development of systems with which users are dissatisfied.

16. No clear communication processes between business and IT

17. Developers build what they believe is needed, without having any real knowledge of the business

18. Business requirements change halfway through the project

19. High expectations of users are caused by vendor's self-serving claims and the glitter of technology. End-users and IS professionals are often misled by the glitter of new technology and vendors' inflated claims – their focus then shifts from problem solving to working with the latest technology and software packages.

20. Business does not recognize that the IT department is more than a cost centre or a necessary evil

The twelve least important issues for business managers are:

1. Rumours about IT damage projects and long-term goals

2. End users do not trust the developers

3. The CIO does not ensure that all members of the team contribute and does not maintain a realistic timetable to meet delivery dates

4. Unsuitable working environment

5. The CIO is not a business person first and a technologist second

6. Unplanned absence of resources because of breakdowns of equipment

7. An organizational culture and ethos that demonstrates people-friendly principles, respecting the potential of employees, does not exist.

8. The management team is not a real team

9. The IT teams are too large

10. Insufficient equipment and infrastructure

11. There is a bad relationship between the CEO and the CIO

12. The CEO does not trust the CIO and does not communicate with him/her frequently

Most of the least important issues have to do with management. This can be interpreted in one of two ways:

➢ There are not many management problems in organisations

➢ The managers do not acknowledge that there are problems with management

4.2.2 Ranking of categories

In section C of the questionnaire the categories were listed separately and the respondents were asked to select the most significant 10 and rank them in descending order of importance. The categories were ranked according to the percentage of respondents who ranked it as one of the five most important issues. These criteria were selected because the researcher believes that it is difficult to clearly distinguish between a ranking of number 3 and number 4, or between number 7 and number 9. The fact that an issue was ranked as 1-5 indicates that it is very important in the eyes of the respondent.

4.2.2.1 IT managers

The **ten most important categories** (ranked according to most selected as 1-5 in descending order of importance)

1. Lack of Communication between IT- and business
2. Project scope changes (changing business needs / technology)
3. The real business need is not understood and solved (ineffective requirements specification)
4. Lack of strategic alignment between IT and business strategy
5. Financial constraints (e.g. budgets, insufficient funds)
6. People issues / behavioural issues / cultural issues (politics, power, culture)
7. Lack of user involvement
8. Lack of shared goals
9. Lack of shared responsibility
10. IT manager/CIO not part of strategy formulation team/board of directors)

4.2.2.2 Business managers

The **ten most important categories** (ranked according to most selected as 1-5 in descending order of importance)

1. The real business need is not understood and solved (ineffective requirements specification)
2. Lack of Communication between IT- and business
3. Project scope changes (changing business needs / technology)
4. Lack of knowledge transfer between IT and the business (understanding each other)
5. Financial constraints (e.g. budgets, insufficient funds)
6. Lack of shared goals
7. Lack of shared responsibility
8. Different perceptions of the measures of success

9. Insufficient client expectation management
10. Lack of strategic alignment between IT and business strategy

4.3   Interview results

Personal interviews were held with both IT- and business managers to elaborate on the results from the questionnaires. During the personal interviews, the participants elaborated on the questions of the questionnaire and a general discussion concerning the relationship and alignment between IT and the rest of the business. Comments made during the interviews were used to enhance the data obtained by the questionnaires. Of the 115 managers (67 IT managers and 48 business managers) interviewed

o   68% said that there is some degree of strategic alignment between the business and IT function

o   59% said that the IT manager/CIO is part of the executive board and is involved in strategic decisions

o   only 32% have heard of the term fusion being used in this context. Most of them could only guess what it means and the opinions were very vague in general.

One interviewee, a systems developer from a large higher education institution captured the essence of the relationship issues as follows:

He said: *"Users don't really know what they really want and an unclear project scope makes the problem even more difficult. Because now the problem definition is incorrect which then lead to developers that build things into a product that they think need to be in a product.*

Things that mostly cause project scope changes are competitors that introduce new technologies, users that change their mind about a project because of negative perceptions. Users sometimes have too high expectations in mind without thinking about if the developers have enough resources to achieve these expectations." The problem with budget constraints according to him is that *"Everybody wants everything, but they are not willing to pay for it"*. One of the main factors that play a role in a project is its

'cost'. There is a lack of communication between business partners and IT professionals. There do exist a gap between the top management of the organization with respect to Business and Information Technology.

"The testing of projects doesn't happen in full force." He said that he had in the old days done thorough testing on a system to try and sort all the bugs out, but today it isn't a necessity because everybody's attitude has changed towards how much testing is done. *"People seem to have enough time to skip the testing but to do the project over at a later stage."*

According to him, some IT investments fail to deliver because of the gap between business and IT. *"IT managers and Business managers normally approach their job differently. Some people are also more powerful inside some organizations because their people contacts are more strategic than another person."*

A problem that is perceived with respect to top management is that they don't really see IT professionals as real people *("They don't treat them as Humans").* The business department sees IT as a never-ending drain on the bottom line that is fighting against the business. *"Business and IT people don't work together constructively."*

"There exist work overload, insufficient training. Some of the technology is too complex for business managers to understand entirely. Insufficient resources can lead to project failure. One problem that exists is that the permanent staff members are not valued as they should be. Some business people don't understand the full potential of the IT capabilities in the sense of what is possible and what is not."

The lack of knowledge inside the organization causes also many conflicts, as well as the fact that they don't really operate entirely as a real team. *"The CIO doesn't in fact take up the position to fill the gap between IT and business.*" There also exist sometimes-bad communication between the CIO and the CEO because of the lack of trust. *"Most leaders act as managers not as leaders, they are not entirely people persons." When projects are taken on there is a greater focus on getting rich, rather than doing something right the*

first time. The project managers isn't assigned to a project full time and thus not
providing his full commitment."

Another participant was outspoken on the problems as experienced from the IT side:
It is his opinion that some of the problems creating a gap in the IT/Business alignment
include the following:

> ➢ The IT department doesn't have money to work with. "They know what the best
>   upgrades and software/hardware purchases would be, yet they don't get to have
>   an input when financial resource allocation decisions are made."
> ➢ The communication gap is very real. For instance, 'business' asks for something
>   from 'IT'. 'IT' wants to prove their worth, so they do more than what is asked,
>   sometimes unnecessary and costly, but now 'business' can't see the benefits or
>   what they received for their money, especially in the case of software. In his
>   words: *"It is not tangible. They can see hardware, like cables, but now they can't*
>   *see the benefits of what they receive. Now IT needs to explain what every aspect*
>   *or feature in the software is for, but that creates an atmosphere of competition,*
>   *which hurts egos and makes the tempers flare*.
> ➢ Sometimes 'business' only realizes the importance of the features once they run
>   into problems with issues such as:
>   - ▪ security - involving software (firewalls and installed software) as well as
>   hardware (using a switch instead of a hub).
>   - ▪ the speed of the network.

The research assistant noted that the cooperation between the two sections seems to be
good and there is an effort towards open communication. "*However, I suspect that there*
are some internal communication problems in the IT department."

Another participant from a large outsourcing company commented:
"*<Our company> is an IT company that has been contracted to develop, enhance and*
maintain an IS for the National Department of Transport (NDT). Because NDT is a very
large client with a complex IT system, it is the only client that we are outsourced to.
<Our company> does not communicate directly with the client. There exists a third

party, who is responsible for consulting. The third party interacts with the client and then presents the business requirements to us. We must then develop and implement these requirements. The business analysts employed by <our company> are thus reliant on the third party for the business requirements. There is never face-to-face interaction between <our company> and the client, which creates a major communication problem. The lack of communication with the users results in solutions not being optimised for the benefit of the specific users."

Furthermore, she commented:

"No proper requirements documents are provided. "

"Discord often exists between the Engineer and the Contractor, because both parties have their own goals and targets."

According to one interviewee, IT is not doing what they are supposed to do in most cases. *"When you (business experts) try to help IT people they think you know too much and they forget that some of us have experience of IT, is just that we don't have the right to do some of the things. I think some of IT project managers have little time available to review project proposals and their background and qualification are questionable. The information system is not a coordinated effort."*

The dean of IT in a higher education institution was of the opinion that the IS/IT strategy is aligned with business strategy, although " 'selling' or marketing new concepts to users are not done effectively. The Senior Support Engineer and representative of the IT support department of the same institution, felt that the IS/IT strategy does not follow business strategy. He said that *"everybody should have knowledge of all activities and there must be no hidden agendas and information is not given through to all levels"*. The interviewer had the impression that this was in internal problem more than an alignment issue.

Some other comments were:

"Our organisation is an IT organization. Our core business is providing IT solutions outside the organization, it is therefore of paramount importance for IT strategy to align itself to the business strategy otherwise the company wouldn't exist. Traditionally it was not important."

"Business is cost-driven, with IT perceived as an enabler. Therefore business dictates resources allocated/spent on IT. The IT function focuses on the greatest benefit to the business by aligning itself with business strategy."

"Business is fully dependent on technology. The business people need to see value - and not technology - from the IT manager. If the business people see value they will spend money on the project. The products that are developed are not necessarily the wrong specification, but the companies need changes over a period of time. So the development cycle is getting shorter. Business must meet deadlines - products could be linked to launch dates etc. The life span of a system is 5-7 years. If the person in the executive position is still there after the experation date of the system he might want to keep it instead of getting a new system."

The participants were also asked whether the IT manager/CIO of their company is part of the board of directors and therefore included in formulating the organisational strategy. Of the … people interviewed, only … indicated that the IT manager is part of the board of directors and actively take part in formulating the corporate strategy. The following comments were made:

"Our company regard the IT manager as the most important person within its endeavour to achieve business, hence the IT manager is part of the strategic planning team and does participate fully."

"The CIO is not a member of the board/EXCO (EXCO – Executive Committee). However, he reports directly to the Financial Director who is a senior member of the

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board. As and when required, the CIO will participate (on the board's request or on his own request) in EXCO meetings on matters of concern."

"In our case (special Malaysian shareholders), the CIO is not on the board of directors. However, the CIO participates in all strategic and planning sessions at management level."

"Yes, he forms part of the <company> group directors. <The company> has different clusters. As a result it has directors and Manufacturing Sectional CEO's. He is also part of the team (Board of directors), and participates in the strategy formulation."

"Not directly. The IT Manager has input as a sub-ordinate manager at a level below the CEO's planning team."

"No, he is not part of the Board of Directors. I don't believe that the IT manager needs to be part of the Board. As long as all projects go via him and he is able to advise the Board on the feasibility of certain projects then it is not an issue for him to sit on the Board. He must also be made aware of the strategic direction of the company for him to give proper advice."

In a higher education institution, the IT manager is part of the strategic planning team, but the interviewee (business manager) felt that "*he keeps a low profile and often lacks the proper marketing skills."*

Furthermore, the principle of fusion was discussed. Less than a third of the interviewees indicated that they've heard the term fusion used in this context, but the greatest majority guessed what was meant by this term. Some opinions were:

"Fusion between business and IS/IT entails a strategic, financial and operational integration between units. It will be necessary for these units to remain objective towards each other and maintain synergy towards achieving common goals. There should be

constant communication between units to stimulate new ideas that will result in greater productivity."

"Where business and IT work together in reaching the goals of the organization. The understanding of how business works by the IT department and vice versa and then a willingness by both business and IT to work together in attaining the organizations goals. This will result in a synergism that attains more than if both functions were disjointed."

"Greater understanding of each other. Non-core has to learn more about the core business and vice versa. This promotes greater collaboration of efforts between the two."

"I suppose fusion will mean better communication between IT and Business. We do in a certain way have something of that effect in our division because there is an Information Management (IM) Department that is the direct link between IT and Business. Every new IT related project that comes up - either initiated by IT or the business - is linked via the IM Department. If this is fusion, then it works very well within our division."

To one business manager fusion means that "*the two departments must function as an integrated whole and that both parties must operate in unison, understanding the needs of the one and the capabilities of the other".* He is of the opinion that to create the necessary fusion, *"joint development on an IT vision and building trust between the parties involved based on a proper service level agreement"* is important.

The IT representative of the same organisation said that fusion between business and IT will work if there is proper communication. *"Ground rules must be set and basic principles must be implemented - there must be no business go-between".*

Some interesting general comments made by participants deserve to be mentioned. The Service Delivery Manager responsible for delivering IT services at a large company said: "Had I completed this questionnaire a year ago, it would have looked a lot different. Only now do we recognize the importance of successful fusion between IS and Business."

"Before the questionnaire was answered, I chatted a little about the IT/Business relationship at the GEPF and in general. The goals and objectives of the IT/Business are common but there seem to be some underlying problems that are prolonging their achievement of their goal. When asked what were these problems they were identified as "Lack of communication" and "Users". There seems to be a lack of communication between programmers / business and users / business. Much emphasis was placed on the functional specification document, which was jointly created by the users and the business group. The users are constantly making changes to this document and these changes are obviously seen by the programmers as a developer's nightmare. These problems are very serious and could not only lead to the failure of the project but also <our company> being an out source company losing a valuable contract. What I found most fascinating was the manner in which these problems were addressed and solved. A team- building day was organized which included everyone involved on the project. The interviewee said: "Many of our differences between us (IT) and the business group were ironed out on that day and the project is now on the path to success".

"Communication between management and IT caused a problem in terms of technology and understanding - IT terms are sometimes referred to as "Greek" and this does cause a problem to the company."

Chapter 5　　　Results: Business- and systems analysis

5.1　　The relevance and format of the survey

There were 79 respondents to the online questionnaire, who are employed at 37 different companies in South Africa (the demographics of the respondents is discussed in 5.3). The participants were invited to comment on the format and design of the questionnaire. Without being specifically asked, 13 people commented on the relevance of the survey. Their comments give a clear indication of the importance and timely nature of this research project. The opinion of most of the respondents on the research initiative is reflected by the words of one person: *"I think a survey of this sort is long overdue. Organisations very often do not fully grasp the importance of the analysis phase of a project. The need to plan more effectively and efficiently up front to ensure a successful implementation is not understood. Consequently, development is often done with insufficient analysis resulting in frequent rework and fire-fighting. Both IT and Business need to understand where analysis fits into the SDLC."*

The comments made by the respondents on the survey were very positive:

"Well thought out."

"Absolutely essential!!!!!!!!!!!! Thanks!"

"About time! :-)"

"I think that this survey is an excellent method to gather information on the perceptions of business analysts and also to become aware of the kind of people and skills that are available."

'Look to be very relevant questions, and good that one can add comments along the way. I'm keen to see the results of this survey."

"Excellent layout, looking forward to results."

"It's brilliantly formulated, well done to the group that put it together."

"This is a very 'grey' area and we NEED the help we get. I really think that this is a great initiative. Please press this issue and make it work."

"Interesting research topic, would like to see results. Thanks."

"Curious to see the outcome and the way forward. Good luck!"

"Good survey......be interesting to see what the outcome is."

The only negative comments that were received on the survey are that "*it took a bit longer than was envisaged (40 minutes). The site was quite slow*" and that "*the survey is a good start, but not exhaustive.*"

5.2   Results of the content analysis

This section summarises the elements of the professional profile of a business- and systems analyst, as determined by the content analysis. This profile was used as the basis for the questionnaire, of which the results are discussed in the next section of this chapter.

Roles and responsibilities
Extract and document user requirements
Analyse/record existing business administration processes
Identify needs for new information systems and/or technology
Evaluate different solutions
Determine the impact of new systems on the business
Testing (User acceptance)

Design new business administration processes

Activity diagrams

Documentation of Computer Systems

Testing (IT Development)

Training users

System implementation (Business usage/administration)

Use cases

System implementation (Hardware/software)

Install, maintain and administer existing computer applications

Link Computer System activities to Business Administration Activities

State diagrams

Link Computer System activities to the Accounting general Ledger

Place Computer Systems Activities/functions within the organogram

Review Job Description content as a result of computerisation

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Concepts used in the job

Value chains / end-to-end processes

Decomposition and partitioning processes

Documentation of each task in detail with data, controls and business rules

Entity relationship diagram / logical data model

Functional decomposition

Object orientation

Business event data flow diagrams

Agile methodologies

Use case

Process flow charts / swim lanes

Narrative text

IDEF

Converting analysis models to design models

Structured design

Self-developed design techniques

Identification of the automation boundary

Object Oriented design

Develop the pseudo code

Document the data dictionary

Business process management

Technical skills and abilities
ERP software
MS Office
MS Project
MSQuery
Visual Basic
MS FrontPage
SQL
UML
HTML
ASP
Java
Corba
Sun Solaris
UNIX
CASE tools
Data modelling tools
RUP (Rational Unified Process)

Principles of topics
Enterprise Resource Planning
Relational database
Client-server
Database management
Web application design/development

Data modelling

Object oriented analysis/development

Data warehousing

Shell scripting

Strategic thinking

E-commerce

Software lifecycle (SDLC)

Metrics preparation and analysis

Risk assessment

Data Redundancy

Supply chain management

Quality management

Change management

Cost management

Financial management

Non-technical and personal attributes

Business sense

Analytical skills

Research skills

Detailed problem solving skills

Multitasking

Stress management

Learning skills

Negotiation skills

Teamwork and -leadership

Facilitation skills

Conflict management

The ability to work well with people

Written communication skills

Oral communication skills

Listening skills

Ability to communicate with non-technical users

Technical communication

Management and leadership

Project Management skills

Relationship management skills

Personal attributes

Proactive

Sound judgement

Tact/discretion

Initiative

Creative

Self-motivated

Team player

Innovative

Trustworthy

Flexible and adaptive

Detail oriented

Ethical

Strong interpersonal relations

Action-oriented

Open-minded

Sense of urgency

Mature

Take responsibility for own performance and development

Value diversity

Deal with reality

5.3   Survey results

The results from the questionnaire, personal interviews and focus group sessions are summarised, integrated and discussed in this section. The demographic data of the respondents, including the companies where they are employed, the experience in their current job and the previous experience are included in appendix 6. The survey results are included as appendix 7. The results are summarised and discussed in this section.

5.3.1   Demographic data

There were 79 usable responses to the online questionnaire, which translates to more than 10% of the total number of people who were invited to participate. The respondents are currently employed at 37 different companies in South Africa. On average they have 4 years of experience in their current jobs.   50% of the respondents have more than three years experience in their current positions. The respondents' previous experience includes project management, programming, business management, IT specialisation, technical support, statistics, sales management and data architecture. Their current job titles vary significantly, supporting the literature that there are no clear-cut titles for analysts in organisations.

The main focus areas of the respondents' companies were Financial (47%), Knowledge and Information Technology (13%) and Transport (11%). The majority of the companies have in-house IT services (74%), i.e. the employees from the IS/IT function and the business unit work for the same company. 13% of the companies provide outsourcing services and 13% use outsourced IT services.

5.3.1.1 Major responsibilities of the respondents

Refer to table 5.1 for a breakdown of the major responsibilities of the participants. The respondents are responsible for business analysis (BA), systems analysis (SA) or both business- and systems analysis (BSA). 9% of the respondents indicated their responsibility as "other" – most of these are project managers of whom 72% report to the

IT department of their company. Their opinions on the various issues covered in the questionnaire, will be taken into consideration in the "All the respondents" category. The rest of the responses are categorised according to the major responsibility and for these results the "other" group have not been taken into consideration – e.g. for the different types of skills required for doing business analysis, systems analysis or business systems analysis.

Major responsibility	% of respondents
Both business- and systems analysis	42
Business analysis	40
Systems analysis	9
Other	9

Table 5.1

5.3.1.2 Host departments of the responsibilities

The majority of the respondents work in the IT department of their organisation. Most of the respondents working in the business departments are responsible for business analysis.

IT department	Business department	Independent consultants
66%	28%	6%

Table 5.2 All respondents

The majority of the respondents doing business analysis are employed in the IT department of their company. The distribution is shown in table 5.3.

IT department	Business department	Independent consultants
56%	34%	10%

Table 5.3 Business Analysis

The distribution of respondents mainly responsible for systems analysis, is as follows:

IT department	Business department	Independent consultants
71%	-	29%

Table 5.4 Systems analysis

Of the people who do both business- and systems analysis, the majority work in the IT department of their company and a large percentage (29%) are independent consultants.

IT department	Business department	Independent consultants
72%	6%	22%

Table 5.5 Both business- and systems analysis

The variation in job titles associated with each of these categories of responsibilities can be seen from table 4.2 below. It is noteworthy that some employees with the job title 'systems analyst' or 'business analyst' are responsible for both business- and systems analysis and that one respondent who calls himself a business analyst, regards the main responsibility of his job to be systems analysis. It is for this reason that the questions in the questionnaire did not refer to the titles of employees, but rather to the responsibility for business- or systems analysis.

5.3.1.3 Different job titles associated with the responsibilities

Business analysis	Both business- and systems analysis
Analyst	Analyst
Business Analyst	Analyst - Planning and process improvement
Business Analyst/Projects&Problem Resolution	Business Analyst
Business Analyst	Business Design Consultant
Director	Business Intelligence Analyst

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Business analysis (cont..)	Both business- and systems analysis (cont..)
Manager - Business Analysis	Business Process Analyst
Manager (Process Management)	Business/systems analyst
Manager Process Improvement	Business/technical analyst
Manager: Automation&Manufacturing systems	Chief systems analyst
Product Specialist	Competency Specialist - Analysis
Product Specialist (Business Analyst)	Consultant
Requirements Engineer	Consultant/Analyst
Senior Business analyst	Data & System Analyst
Senior Business Consultant	Deputy Director: Business Analysis
Senior Consultant	Deputy Director: Business Systems Analysis
Specialist Business Analyst	Lead Analyst
	MIS Analyst
System analysis	MU Specialist
After Sales Systems Analyst	Owner
Business Analyst (Development)	Planning Business Process Specialist (BPS)
Director - Projects	Product Specialist/Business Analyst
Senior Systems Analyst	Senior Business Analyst
Systems Analyst	Senior developer
	Solutions Analyst
Other	Specialist Software Systems
Project Manager	Systems Analyst
Product Specialist	Systems Manager
Support Controller	
Project Manager / Business analyst	
Senior Lecturer	

Table 5.6

5.3.1.4 Academic qualifications

The academic qualifications of the respondents are remarkably high. 63% of the respondents have a tertiary qualification - the majority (50%) of the respondents have degrees and higher degrees, whereas 13% completed a national Diploma. Only 13% have no post-matric qualification at all.

5.3.1.5 Formal training in other areas

The majority of the respondents received training in IT skills (89%), while a high percentage (66%) were also trained in business skills. A large percentage of respondents received training in interpersonal skills (59%). This is an indication that the IT industry have realised the value of such skills, which is especially true for analysts.

5.3.2   The need for a professional body and body of knowledge

There is an overwhelming need for a professional body and –status for business- and systems analysts. 92% of the respondents were in favour a professional body for analysts in South Africa. One respondent, who was against the idea of a professional body, commented that it "*might lead to elitism*". He regarded a body of knowledge and proper training as more important. All the respondents regarded it as important to have body of knowledge (BOK). One respondent commented: *"It would be great if in future there could be something like an Analysis Competency and to actually do a 'pro-metric' type 'certification' for analysts. It would also be nice to have an overall 'best practice' model that has actual problems and solutions in South Africa."* Another said: "*It is imperative that a body of knowledge regarding Business Analysis is developed. A clear distinction must be made between Business Analysis (analysis) and System Analysis (design). This distinction is often not well understood and is the heart of system solution problems. Business role players must first understand their business events and how they want their business to operate (including the Business Rules), before specifying the System and People solutions for how to support it*." Another respondent agreed that a body of knowledge is essential, but had a different opinion of the distinction between business-

and systems analysis: "*People define their roles differently but essentially we perform similar functions. I would love a standardisation of role definition. I would also love a central base of sharing knowledge across industries as well as tailor made training initiatives specific to the roles.*"

5.3.2   General questions asked

A number of questions were asked to determine the viewpoints of analysts on different matters. The responses were as follows:

5.3.2.1 Do you need an IT background to do your current job?

It seems that and IT background is very beneficial if you want to be an analyst. For business analysis it is regarded it as either 'essential' (39%) or 'useful but not essential' (61%). Only one respondent doing business analysis said that an IT background is not really necessary

57% of the systems analysts regard an IT background as 'essential' and 43% regard it a 'useful but not essential'.

70% of the people who are responsible for both business- and systems analysis regard having an IT background as 'essential' and 30% regard it as 'useful but not essential'.

The following graph shows the responses of all the participants:
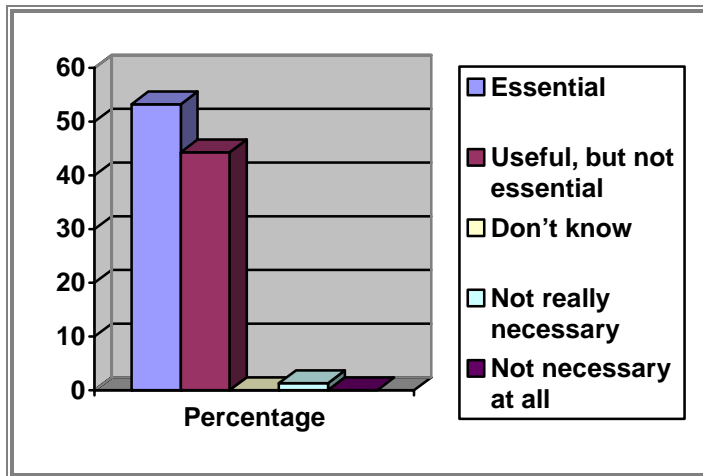
Fig 5.1 The need for an IT background – all participants

5.3.2.2 Do you apply business knowledge to increase the effectiveness of computer systems?

No respondents indicated that they never use business knowledge in their current positions. 62% of all the respondents indicated that they use business knowledge to increase the effectiveness of computer systems.

56% of the business analysts use it 'very often' and 44% use it often.

For systems analysis, 57% indicated that business knowledge is used often 43% 'very often'.

70% of the combination involves business knowledge 'very often', 18% often and only 3% use it 'seldom'.

The following graph shows the responses of all the participants:
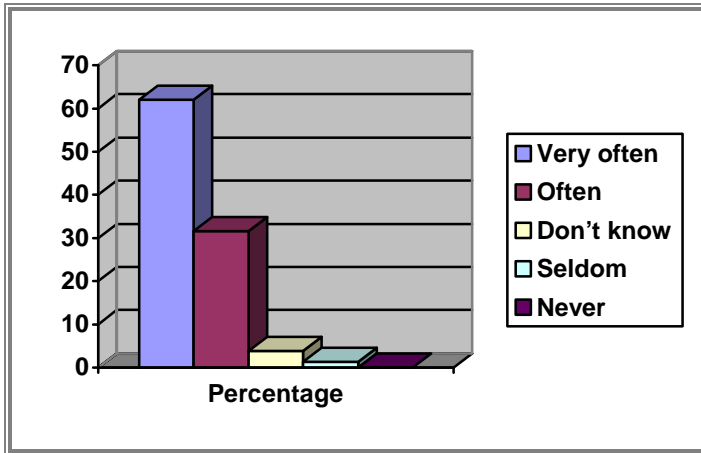
Fig 5.2 The application of business knowledge – all participants

5.3.2.3 Do you act as a liaison between business people who have a business situation and technology people who provide IT solutions?

This seems to be the major role of business analysis - 78% of these respondents indicated they fulfil this role 'very often', whereas 64% of the people who do both business- and systems analysis fulfil this role 'very often'. Only 43% of the systems analysts indicated that they fulfil the liaison role 'very often' and 29% selected 'often'. 29% of the systems analysts indicated that they fulfil this role only 'seldom'.

The following graph shows the responses of all the participants:
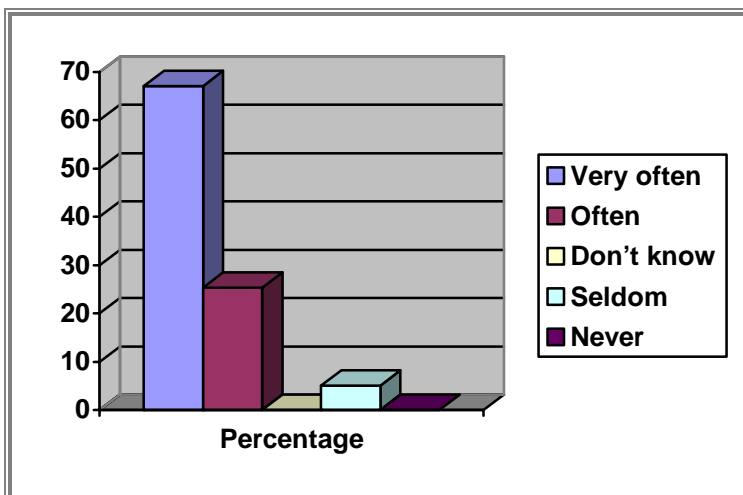
Fig 5.3 The liaison role – all participants

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5.3.2.4 Are you directly involved in software development?

Of the participants doing systems analysis 57% of systems analysts are involved in software development 'very often' and 29% are 'often' involved. No respondents doing systems analysis indicated that they are never involved in software development. Only 9% of the business analysts indicated that they do software development 'very often' and 22% indicated that they do it 'often'. 47% of business analysts are 'seldom' involved in software development and 19% are 'never' involved. Of the people doing both business- and systems analysis, 67% are 'very often' and 'often' involved in software development, and 30% 'seldom' or 'never'.

5.3.2.5 Do you use both electronic- and physical document flows between activities of people when analysing a business?

	% All	% BA	% SA	%BASA
Very often	36	31	29	42
Often	43	48	57	42
Don't know	9	9	14	6
Seldom	10	12	0	10
Never	2	0	0	0

5.3.2.6 Do you analyse the business requirements before specifying a system (i.e. a customised solution or existing package)?

	% All	**% BA**	**% SA**	**%BASA**
Always	65	59	57	70
Most of the time	24	25	15	30
Don't know	0	0	0	0
Seldom	8	16	14	0
Never	3	0	14	0

5.3.2.7 Are you responsible for producing technical requirement specifications?

58% of the systems analysts are responsible for producing technical specifications ('often' and 'very often'). 66% of the business analysts are 'seldom' and 'never' responsible for it and only 6% indicated that they 'often' produce technical specifications. The people doing a combination of business- and systems analysis produce technical specifications 'very often' and 'often' in 60% of the cases.
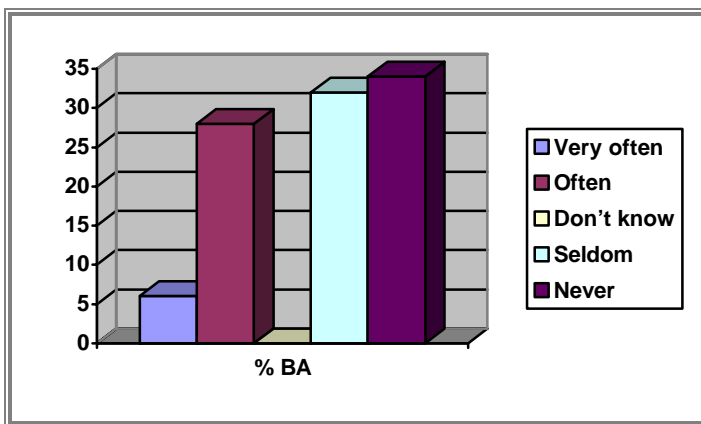
Fig 5.4 The involvement of systems analysis in technical specifications – business analysis
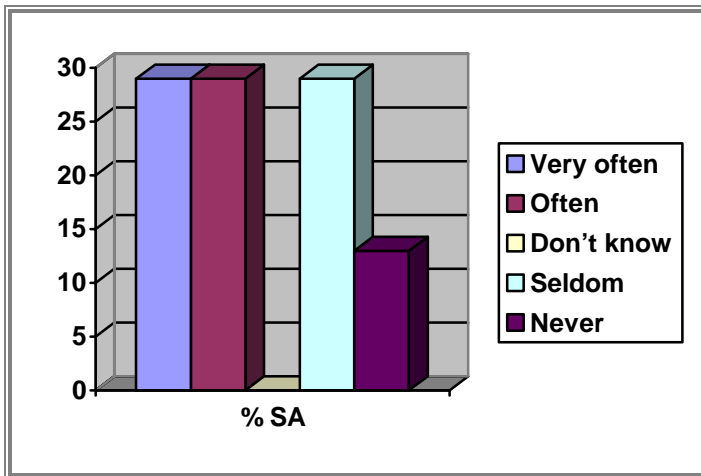
Fig 5.5 The involvement of systems analysis in technical specifications – systems analysis

5.3.2.8 Do you actively participate in the decision making with senior user management towards automation strategies?

The high percentage of participants (39%) who selected option 3 (don't now) indicates that they did not understand the question correctly. Of all the participants that did make a choice, 28% chose 'very often' and 'often', while 27% chose 'seldom' or 'never'. This supports the suspicion that these results might not be valid.

	% All	% BA	% SA	%BASA
Very often	1	16	42	33
Often	27	50	29	27
Don't know	39	9	0	4
Seldom	3	22	29	27
Never	24	3	0	9

5.3.2.9 Do you consider yourself to be a technical expert with some business knowledge or a business expert with some technical skills?

78% of the respondents who are responsible for business analysis regard themselves as business experts with some technical skills. On the other hand 85% of the systems

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analysts regard themselves as technical experts with some business knowledge. The people who are responsible for both types of analysis were split halfway between these two options (51% versus 49%).
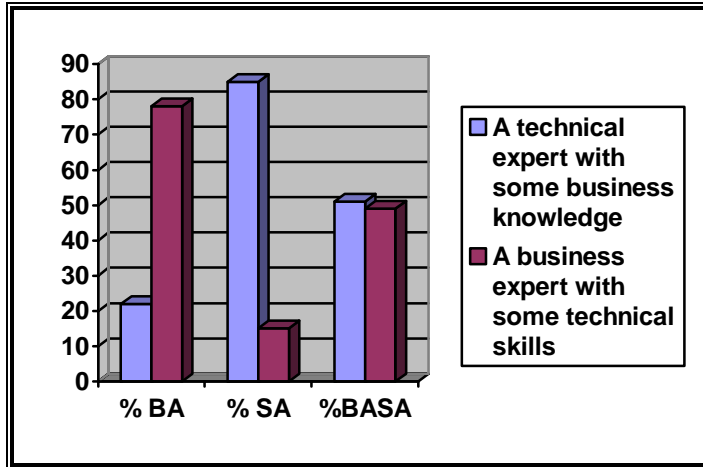
Fig 5.6 The balance between technical expertise and business expertise

5.3.2.10 Do you think there is a need for academic training of students in a combination of IT skills, business skills and interpersonal skills?

There is definitely a need for academic training of students in the skills mentioned. 68% of the respondents strongly agreed and 28% agreed that this is necessary. Only 1% of the respondents regarded such training as unimportant. 59% of the business analysts strongly agreed and 72% of the systems analysts strongly agreed that academic training is important. This is probably because the business skills needed by business analysts are easier to learn on the job than the technical skills needed by systems analysts. 76% of the people who do both business and systems analysis strongly agreed to the need for academic training. This emphasises the need for an instructional offering that includes both business- and technical IT skills.

The response to this question varied according to the academic qualifications of the respondents. No respondent strongly disagreed that there is a need for academic qualifications. The only respondents who disagreed that there is a need for formal qualifications were people with only matric (10%). 40% agreed and 40% strongly agreed

to the need for qualifications. The other 10% did not answer the question. The higher the qualifications of the respondents, the more strongly they agreed to the need for such qualifications. 70% of diplomats, 76% of graduates, 86% of the people with honours degrees and 100% of those with Masters and Doctorate degrees strongly agreed that there is a need for academic training in analysis.

5.3.3   The professional profile of analysts

5.3.3.1 Responsibilities of analysts

Comments made by respondents indicate that the roles and responsibilities of analysts are not a clear-cut case. One respondent said: "*I think there is a huge gap between business and IT and this is what I see as the responsibility of a Business Analysis - to provide a link between business and IT, thus talking both languages. I don't believe the system and business analyst should be the same person. These are two areas of speciality and I don't know many people who can fill both these roles.*" Another respondent differed from this viewpoint and said: "*I feel the two career positions should be merged into one position for analysts who have both technical hands on and with business knowledge. Sometimes there is a duplication of tasks, especially when doing investigations one's specification can contain the design and requirements. Executives want to hear this from one person.*"

The responsibilities associated with the person doing business analysis (BA), systems analysis (SA) and business systems analysis (BSA) are shown below.

The 10 most important responsibilities of the person doing **business analysis** (ranked in descending order of importance):

1. Extract and document user requirements
2. Analyse/record existing business administration processes
3. Determine the impact of new systems on the business
4. Identify needs for new information systems and/or technology

5. Evaluate different solutions

6. Design new business administration processes

7. Testing (User acceptance)

8. Activity diagrams

9. Use cases

10. System implementation (Business usage/administration)

The 10 most important responsibilities of **systems analysis** (ranked in descending order of importance):

1. Documentation of Computer Systems

2. Extract and document user requirements

3. Evaluate different solutions

4. Testing (IT Development)

5. Identify needs for new information systems and/or technology

6. Activity diagrams

7. System implementation (Hardware/software)

8. Analyse/record existing business administration processes

9. Install, maintain and administer existing computer applications

10. Determine the impact of new systems on the business

The 10 most important responsibilities of **business systems analysis** (ranked in descending order of importance):

1. Extract and document user requirements

2. Analyse/record existing business administration processes

3. Identify needs for new information systems and/or technology

4. Evaluate different solutions

5. Testing (User acceptance)

6. Determine the impact of new systems on the business

7. Documentation of Computer Systems

8. Testing (IT Development)

9. Activity diagrams

10. Design new business administration processes

The following table shows the six responsibilities that were selected amongst the top ten choices by all three groups of respondents. These are therefore important for both business and systems analysis. An average of the ranking positions of the three groups was calculated and the six responsibilities were ranked according to this average. For example if the people responsible for business analysis ranked the responsibility as number 1 (most important), for systems analysis it was ranked number 3 and for both business- and systems analysis it was ranked number 4, the average ranking would be (1+3+4)/3= 2.66. A high average ranking therefore indicates an important responsibility according to all three groups.   These responsibilities and the average of their rankings for the three groups of respondents are:

Responsibility	Average ranking
Extract and document user requirements	1.3
Identify needs for new information systems and/or -technology	4.0
Evaluate different solutions	4.0
Analyse/record existing business administration processes	4.0
Determine the impact of new systems on the business	6.3
Activity diagrams	7.7

Apart from the above, the following responsibilities were also selected amongst the top ten as very important for people doing **business analysis**:

Responsibility
Design new business administration processes
User acceptance testing
Use cases
System implementation (Business usage/administration)

Apart from the above, the following responsibilities were also selected amongst the top ten as very important for people doing **systems analysis**:

Responsibility
Documentation of Computer Systems
Testing (IT Development)
System implementation (Hardware/software)
Install, maintain and administer existing computer applications

The three groups added the following responsibilities to the 'other' section in the questionnaire:

Both business- and systems analysis: Other responsibilities
➢ Gap Analysis between systems
➢ Integrate business process and system solutions, Develop and/or enhance systems, Protect intellectual property, Compile / review maintenance specifications, Sign off Change control and Project gates and closure documents, Logical data store designs, Update knowledge base, Implement procedures
➢ Research & Development
➢ Process Custodian for Group IT

- ➢ Programmer
- ➢ Re-engineering exercises, Integrity checks, Document Business Cases & BRS, Strategy designs & implementation
- ➢ Identify Business Information needs, Develop Information Delivery and Analyse Systems
- ➢ Architecture, Systems integration, Tool-building, Technical training
- ➢ Project management - coordinating the IT implementation of system development done, QA, User sign-off.
- ➢ Extract data, Analyse data, Validate and test data, Processing (slicing&dicing) data, Consolidate data, Distribute and present information (processed data), Write small programs where mainframe can not supply data, Tracking flow of data from mainframe to warehouses to publishing of information, Provide for changes in requirements of customers/users
- ➢ Testing & Support Team Management, Business and Systems Analyst Team Management, Business Intelligence, Design and Delivery Member of IT Management Team, Leadership & Rewards Recognition Team
- ➢ Ensuring that all linked interfaces are included in required projects etc.
- ➢ Client and stakeholder relationship building, Workshop requirements, JAD sessions
- ➢ Look after a product and need to analyse the requirements of an organisation and link them to the functionality of the product - Identify if the product is a good fit or not
- ➢ Business Process Re-engineering Business Process Improvement

Business analysis: Other responsibilities

- ➢ Process Integration, Process Efficiency, Modelling & Improvement Suggestion, Process Visualisation, Define Change Management Requirements, Compile Logical Data Models, Business Analysis, Training, Linking of System, MIS, Measurement

➢ Develop Business Cases

➢ Plotting Business Processes using ARIS Tool Creating Hierarchies for systems, KPI, Business Rules, HR and organogram of business, Risks

➢ Design and analysis of the organisation's business processes and integrating them into a common knowledge base.

➢ IDEF and IDEF0 diagrams, Database analysis

➢ Update the Computer and Procedure Manuals

➢ Analysis of manufacturing & engineering processes, Determine how systems should be changed/designed to support business, manufacturing & engineering processes, Map business requirements and problems onto the IT Strategy and IT architecture, Manage outsource contract

➢ Test result verification, Problem resolution, Bug finding

➢ Problem resolution

➢ Provide first line user support, as per agreed Service Level Agreements.

➢ Compile business case mentoring

➢ Prepare business process architecture baselines, Manage business architecture projects

➢ Comply with project SDLC, Manage the project start to end, Testing (Test plan & scripts), Quality implementation Project plan

➢ Process Mapping, Aligning with process owners to gather information on business requirements

Systems analysis: Other responsibilities

➢ Implementing ISO 9001:2000 in our organization

➢ Contract/co-ordinate interfaces, Manage system implementation throughout the SDLC

➢ Estimate software development in order to produce a quote.

5.3.3.2 The concepts/techniques used in the job

The respondents ranked the ten most important concepts as follows (descending order):

Business analysis
1. Process flow charts / swim lanes
2. Value chains / end-to-end processes
3. Business process management
4. Documentation of each task in detail with data, controls and business rules
5. Entity relationship diagram / logical data model
6. Functional decomposition
7. Business event data flow diagrams
8. Decomposition and partitioning of the processes
9. Narrative text
10. Use case

Systems analysis
1. Value chains / end-to-end processes
2. Process flow charts / swim lanes
3. Documentation of each task in detail with data, controls and business rules
4. Entity relationship diagram / logical data model
5. Decomposition and partitioning of the processes
6. Functional decomposition
7. Business event data flow diagrams
8. Converting analysis models to design models
9. Structured design
10. Self-developed design techniques

Both business- and systems analysis
1. Process flow charts / swim lanes
2. Business process management
3. Entity relationship diagram / logical data model
4. Documentation of each task in detail with data, controls and business rules
5. Value chains / end-to-end processes
6. Business event data flow diagrams
7. Functional decomposition
8. Object orientation
9. Structured design
10. Converting analysis models to design models

Six of the concepts were amongst the top ten choices of all the respondents and they are therefore important for both business and systems analysis.   The average value of the rating for each of these groups was calculated and used to rank the concepts (calculation done as explained before). The concepts used and the average of the ratings are:

Concept/technique	Average rating
Process flow charts / swim lanes	1.3
Value chains / end-to-end processes	2.6
Documentation of each task in detail with data, controls and business rules	3.6
Entity relationship diagram / logical data model	4.0
Functional decomposition	6.3
Business event data flow diagrams	6.7

Apart from the above, the following concepts/techniques were also selected amongst the top ten as very important for **business analysis**:

Concept/technique
Business process management
Decomposition and partitioning of the processes
Narrative text
Use case

Apart from the above, the following concepts/techniques were also selected amongst the top ten as very important for **systems analysis**:

Concept/technique
Decomposition and partitioning of the processes
Converting analysis models to design models
Structured design
Self-developed design techniques

5.3.3.3 Technical (IT related) skills used in the job

The ten most important technical skills were ranked (descending order) as follows:

	Business analysis	Systems analysis	Both business and systems analysis
1	MS Office	MS Office	MS Office
2	MS Project	MS Project	MS Project
3	Data modelling tools	SQL	Data modelling tools
4	CASE tools	Visual Basic	SQL

5	RUP (Rational Unified Process)	HTML	CASE tools
6	UML	Data modelling tools	Visual Basic
7	SQL	ERP software	UML
8	ERP software	Java	MSQuery
9	Visual Basic	MSQuery	MS FrontPage
10	HTML	MS FrontPage	RUP (Rational Unified Process)

Four of the technical skills were amongst the top ten choices of all the analysts and are therefore important for business analysis, systems analysis and business systems analysis. The average value of the ranking for each of these groups was calculated and used to rank the skills. The technical skills used and the average of the rankings are as follows:

Technical skills	Average ranking
MS Office	1.0
MS Project	2.0
Data modelling tools	4.0
SQL	7.0

For **business analysis** the following technical skills are amongst the ten most important:

Technical skills
CASE tools
RUP (Rational Unified Process)
UML
ERP Software
Visual Basic
HTML

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For **systems analysis** the following technical skills were also selected amongst the ten most important:

Technical skills
Visual Basic
HTML
ERP Software
Java
MS Query
MS FrontPage

One interviewee commented: *"Mastering new languages, new software and hardware should be a continuous challenge."*

5.3.3.4 Knowledge of principles applied in the job

The ten most important principles were ranked as follows (descending order of importance):

	Business analysis	Systems analysis	Both business- and systems analysis
1	Change management	Relational database	Relational database
2	Software lifecycle (SDLC)	Data modelling	Data modelling
3	Data modelling	Risk assessment	Software lifecycle (SDLC)
4	Relational database	Database management	Database management
5	Risk assessment	Software lifecycle (SDLC)	Change management
6	Quality management	Quality management	Quality management

7	Strategic thinking	Object oriented analysis/development	Client-server
8	Database management	Strategic thinking	Object oriented analysis/development
9	Object oriented analysis/development	Client-server	Risk assessment
10	Financial management	Data warehousing	Strategic thinking

Eight of the principles were amongst the top ten choices of all the analysts and are therefore important for business analysis, systems analysis and business systems analysis. These principles and the average of the ratings of the three groups are as follows:

Principles	Average rating
Relational database	2.0
Data modelling	2.3
Software lifecycle (SDLC)	3.3
Database management	5.3
Quality management	6.0
Object oriented analysis/development	8.0
Strategic thinking	8.3
Risk assessment	8.5

The people responsible for **business analysis** also selected the following principle amongst the ten most important:

Principles
Change management
Financial management

For **systems analysis** the following principle are among the ten most important:

Principles
Client server
Data Warehousing

5.3.3.5 Non-technical skills

The following ten non-technical skills were ranked as follows (descending order):

	Business analysis	Systems analysis	Both business and systems analysis
1	Business sense	Analytical skills	Analytical skills
2	Analytical skills	Detailed problem solving	Business sense
3	Written communication skills	Written communication skills	Detailed problem solving skills
4	Teamwork and -leadership	Oral communication skills	Written communication skills
5	Detailed problem solving	Business sense	Listening skills
6	The ability to work well with people	Listening skills	Teamwork and -leadership
7	Listening skills	Multitasking	Ability to communicate with non-technical users
8	Research skills	Teamwork and -leadership	Facilitation skills
9	Facilitation skills	Ability to communicate with non-technical users	Oral communication skills
10	Ability to communicate with non-technical users	Facilitation skills	Research skills

Eight of the non-technical skills were amongst the top ten choices of all the respondents and are therefore important for both business and systems analysis.   They are:

Non-technical skill	Average ranking
Analytical skills	1.33
Business sense	2.6
Detailed problem solving	3.3
Written communication skills	3.3
Listening skills	6.0
Teamwork and -leadership	6.0
Facilitation skills	9.0
Ability to communicate with non-technical users	8.7

The respondents also selected the following non-technical skills amongst the ten most important for **business analysis**:

Non-technical skill
The ability to work well with people
Research skills

Respondents doing **systems analysis** also selected the following non-technical skills among the ten most important:

Non-technical skill
Oral communication skills
Multitasking

It is clear that the combination of analytical skills, business sense and communication skills are extremely important in analysis. Analytical skills were chosen by all analysts –

which could be expected. An interviewee elaborated on such analytical skills as follows *"You will need to understand your customers and the markets. Research design and analytical skills are critical – e.g. conducting market research studies, using database- and statistical packages. Training in measurement and statistics is desirable."*

Business sense is important for analysts. In an interview, one participant said: *"Analysts should be focused on influencing business decisions that impact the sales forecast.   They will determine where the inefficiencies are and make recommendations to improve the profitability of the business."* Business sense was selected as one of the top five skills for systems analysis too, although the emphasis is usually more on technical skills. During an interview a systems analyst commented: *"Analysts need to have a sense of what it takes to run a successful business. Profitability is important and you should know what it means to increase revenues and manage costs. Training in management accounting and activity based costing is desirable."* This is supported by the B2B training group (www.b2btraining.com) who are responsible for training analysts*: "Business problems do not come as neatly packaged as marketing problems, accounting problems or organizational problems. They arise within the context of the business, with all the complexity and richness that a business provides."*

Written communication skills are important for all analysts. Oral communication was chosen as an important skill in systems analysis, whereas listening skills – also a communication skill –forms an important part of the combination of business- and systems analysis. Business analysis requires teamwork and leadership – this skill was chosen by all analysts and therefore seems to be a very important skill for all analysts. As worded by one of the interviewees: *"Learners should see how important effective communications is to both team and client relationships."*

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5.3.3.6 Personal attributes most required for the job

The ten most important attributes were ranked as follows (descending order of importance):

	Business analysis	Systems analysis	Both business and systems analysis
1	Proactive	Proactive	Self-motivated
2	Team player	Self-motivated	Proactive
3	Initiative	Innovative	Team player
4	Take responsibility for own performance and development	Sound judgement	Initiative
5	Self-motivated	Tact/discretion	Flexible and adaptive
6	Flexible and adaptive	Initiative	Open-minded
7	Strong interpersonal relations	Open-minded	Innovative
8	Open-minded	Team player	Sound judgement
9	Sound judgement	Flexible and adaptive	Creative
10	Detail oriented	Detail oriented	Take responsibility for own performance and development

Seven of the personal attributes were amongst the top ten choices of all the respondents and are therefore important for both business and systems analysis.   These attributes and the average of the ranking are

Personal attributes	Average rating
Proactive	1.3
Self-motivated	2.7

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Sound judgement	3.0
Initiative	4.3
Team player	4.3
Flexible and adaptive	6.7
Open-minded	7.0

For **business analysis** the following personal attributes were also selected amongst the ten most important:

Attributes
Take responsibility for own performance and development
Strong interpersonal relations
Detail oriented

The following attributes were also selected amongst the ten most important for doing **systems analysis**:

Attributes
Innovative
Tact/discretion
Detail oriented

Self-motivation, initiative and being pro-active seem to be important attributes of analysts. One interviewee stated: *"Frequent changes in technology will test the adaptability of learners"* while another said: *"Learners must realize the importance of deadlines."* Being a team player is not as important in systems analysis as in business analysis and the combination of the two, whereas open-mindedness, discretion and sound judgement are very important in systems analysis. As worded by one interviewee: *"You'll be working in cross-functional teams, involved in building consensus and making*

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management decisions. You will need to work with computer scientists, management scientists, information systems analysts, database specialists and administrators, economists, statisticians, accountants, financial managers, financial analysts and market analysts. You should be a good communicator and a team player. Training in communication and negotiation skills is desired."

Business analysis means people have to take responsibility for their own performance and development. This is probably true because the job of the business analyst is not clearly defined and their careers can be "side-tracked" very easily.

5.4 Definitions of business analysis and systems analysis

The respondents' definitions are included in appendix 9. A summary of the major elements of the definitions is listed below (the phrases that appear most often). These could be used to add to the list of responsibilities and tasks. The elements are as follows (duplicates removed):

5.4.1 Business analysis

5.4.1.1 Analyse current business practices
- ➢ Analyse problems.
- ➢ Analyse current business processes.
- ➢ Understand your business environment.

5.4.1.2 Understand and define business requirements
- ➢ Analyse business requirements.
- ➢ Identify requirements for improvements.
- ➢ Consult users.
- ➢ Understand and interpret a business need or requirement.

5.4.1.3 Document requirements

➢ Document and analyse User Requirement Specifications and Business requirement.

➢ Document requirements in a clear and understandable way.

5.4.1.4 Improve business processes

➢ Provide the most effective process for the user.

➢ Find a better way of doing things, which eliminate all possible errors.

➢ Providing the BEST solution to the user's requirements, having a minimal impacting on time & money.

➢ Analyse & create a solution that satisfies the users' need/requirement.

5.4.1.5 Link business with IT

➢ The missing link between business and IT.

➢ Provide a common understanding to business people and technical people.

➢ Facilitate a compromise between various stakeholders.

5.4.2   Systems analysis

In the opinion of one of the respondents, a systems analyst should report to the business analyst. Their functions are:

5.4.2.1 Technical analysis

➢ Technical analysis of a system / systems to best optimise and utilise the functionality available to the business' benefit.

➢ The technical description of systems needed to enable the business processes described in business analysis.

➢ Analyse a computer system and write specifications to enhance the computer system.

➢ Analyse current IT Infrastructure to see how it serve the needs of the current business processes.

➢ Know by hart the IT side of the business.

➢ The IT/IS aspect of business analysis.

5.4.2.2 Translate user requirements into technical specification

➢ Provide technical specifications based on business requirements.

➢ Develop quality system documentation to ensure meeting of user needs.

➢ Take business case and translate into technical requirement and view how architecture, system software, tables, processes etc will be affected with changes to the core system and evaluate system impact, system response etc.

5.4.2.3 Design the technical solution and solve business problems

➢ Design system solution to business problem - analyse system impact and architecture - develop / implement the system

➢ Find the best technical solution for the business requirement

➢ Converting the 'what' into the 'how' i.e. the physical component

➢ Automating solutions

5.4.2.4 Testing

➢ Test the newly engineered version of the program.

➢ Conduct Integration Testing User-Acceptance Testing

5.4.2.5 Training

➢ Prepare Training Material

➢ Conduct Functional training

➢ Provide support to business during UAT and implementation.

5.4.2.6 Liaison between business and IT people

➢ Close liaison between business & development team during development

➢ Act as the in-betweener between the systems architect and business in order to understand the requirements and delivering the best solution.

Chapter 6   Creating fusion

6.1   Introduction

The purpose of this chapter is to integrate the results from the various parts of the study into a framework towards achieving fusion in organisations. The nature of non-fusion has been illustrated by this study into the failure of IT systems and relationship problems between business and IT. A number of employees have been identified to play a role in creating fusion on all levels of the organisation. The analyst, IT executive and project manager are important role-players. This study focuses on the first two role players.

6.2   What is fusion?

From literature and the empirical research on the business-IT interface, there is fusion between the IT function and the rest of the business if the following criteria are met:

1. The IT department and the business client have the same goals.
2. Both the business and IT representatives take responsibility for project success.
3. Users are involved in the problem definition, planning and design process.
4. The IT function solves the real business need, not only what they perceive as the need.
5. Business clients and IT professionals understand each other's worlds and speak a common language.
6. Business clients and IT professionals have realistic expectations of the other's performance.
7. Clear communication between the parties.
8. Effective documentation.
9. Effective and timely testing, involving the client.
10. Interpersonal relationships are based on trust, empathy and mutual respect.
11. The business strategy and the IT strategy are developed to support each other.
12. Knowledge transfer from one project to the next.

13. Management involvement and good leadership - that is supportive of change and technological advancement - on both top management and project management levels.
14. An organisational culture that is supportive of technology.
15. IT leaders who understand and accommodate the unique characteristics of the IT environment (high stress, personnel turnover, technological complexity and skills obsolescence) and the IT professional (more comfortable with logic, facts and data than with ambiguous business and people issues, a need for independence and autonomy and the need to be challenged in their jobs).

6.3   The OD role of IT executives

6.3.1   Introduction

An organisation where there is fusion between business and the IT function can be called a 'healthy' organisation. According to Bargsley (2002) a "healthy organisation" is one in which people are generally satisfied with the quality of their work life, i.e. they feel good about going to work. A healthy organisation responds well to the need for change – building a healthy department and also contributing towards a healthy organisation is the task of the IT executive.

Miller, Katz & Gans (1998) of the Kaleel Jamison Consulting Group, Inc. refers to a "worthy organisation" - one that people want to join. Some key characteristics of such a worthy organisation, which the IT manager can help build, are:

  ➢ A growing organisation.
  ➢ People enjoy ample opportunities for continuous growth and development.
  ➢ A sense of community.
  ➢ Guaranteed safety.
  ➢ Leaders worthy of respect and followership.
  ➢ People are treated as business partners.
  ➢ Communications flow clearly and freely.
  ➢ A clear work agreement.

> ➢ Policies, procedures and practices enable all people to do their best work.
> ➢ A place where people of your background, nationality or gender can succeed.
> ➢ Employees feel wanted, needed, and valued for their contribution, skills and talents.
> ➢ A favourable reputation as an organisation.
> ➢ Good pay and benefits.

Kunda (2001) includes the following in his list of factors influencing IT project success and a positive business-IT relationship:

> ➢ Motivation and gradient of enthusiasm of IT personnel.
> ➢ Incentives of IT professionals.
> ➢ Cognitive skills of all stakeholders.
> ➢ Perceptions
>   ▪ Group members have different perceptions and bias as to what makes a good system.
> ➢ Aligned goals.
> ➢ Interactions and communication.
>   ▪ There has to be harmony in the group, else the success of software systems will be affected.
> ➢ Organisational resources and support
>   ▪ Work overload, skills shortages, budgetary pressures.
> ➢ Organisational setting and management style
>   ▪ The arrangement of organizational subsystems, the division of labour and hierarchy of authority.
> ➢ Organisational culture
>   ▪ Affects system requirements and system acceptance.

Literature on the reasons why IT projects fail and for the adverse relationship between IT and the rest of the business, imply that there are a number of social problems that must be addressed before an IT executive can be effective in organisational development. An important category of relationship issues, as indicated by IT managers in the survey, is

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people issues/behavioural issues/cultural issues. These include resistance to change, power play and leadership gaps. The most challenging issues in IT today are not about technology or systems; nor are they about the use of information. They refer to the styles and behaviours of many IT professionals (Coghlan, 1996). Many IT executives are still unaware of the many human organisational factors that can be attributed to project failure. They also fail to take a holistic perspective on IT related organisational change and –development. They even find it difficult to convince their superiors of the merit that lies in the application of information systems in their organisation.

IT people regard themselves as being under stress. However, many business managers believe this is due to their inability to form effective relationships with the business, rather than the inherent stress of the job. The modern organisation is a highly political environment and IT people need to be equipped to deal with the situations that face them. This will make the IT professionals more credible and influential – it will therefore ensure that the organisation more effectively exploits IT for business advantage.

The IT executive is the one high level manager who is involved in all aspects of an organisation, and who has a real "helicopter view" of the organisation and its activities. IT executive's need to think big to figure out how information technology can best support business goals and help the company gain a competitive advantage. To understand the challenges of organisational development, the IT executive must place himself in the position of the HR manager and see the challenges from his perspective. However, OD is the planned process of developing an organisation to be more effective in accomplishing its desired goals - it is distinguished from human resource development, in that HRD focuses on the personal growth of individuals within organisations, while OD focuses on developing the structures, systems and processes within the organisation to improve organisational effectiveness. OD is therefore concerned with change that will more fully integrate individual needs with organisational goals, lead to greater organisational effectiveness through better utilisation of resources, especially human resources, and provide more involvement or organisation members in the decisions that directly affect them and their working conditions. When the reasons for non-fusion are taken into consideration, and the OD roles and responsibilities are summarised, it

becomes clear that the non-fusion in organisations can be addressed if the IT executives fulfils an OD role. This has been supported by many of the comments made by participants during the personal interviews, when asked about the business-IT relationship.   The following important responsibilities for IT executives - in creating fusion in their organisations - have been identified by literature and confirmed by both IT and business managers:

6.3.2   Change management

Change management is the process, tools and techniques to manage the people side of business changes, to achieve the desired outcome and to make effective changes within the social infrastructure of an organisation. The impacts of IT projects on organisational activities are immense and can even modify the vision or the organisation. The implementation of IT projects, especially large projects, is synonymous to change management in an organisation, either for gaining competitive advantage or altering the work culture. Change presents both risk and opportunity and people therefore seek, yet fear change. One of the most important reasons for IT/IS project failure - according to both IT and business managers – is that 'people resist change because they do not want to shift from their comfort zones'. One participant commented "*hidden agendas often play a significant role in resistance to change.*" People change management, aimed at achieving customer acceptance of IT systems is therefore a major challenge for IT executives.

6.3.3   Developing individuals

The success of organisational development therefore ultimately rests on individual action. Many of the issues that were identified by IT and business managers as barriers towards a good business-IT relationship, were therefore focused on the individual. Factors like taking responsibility, 'connecting energies' to move in the same direction, communication skills, pressure- and stress management, are absent in many organisations. Work overload, insufficient training and hidden agendas were also mentioned as prevalent during the interviews. Literature states that there is not an attitude

of constant refreshing and retraining in many organisations. Individual development should be the starting point of organisational development. Businesses and organisations have to develop the capacity to continuous change in a highly competitive environment. For this, more than the acquisition of new knowledge and skills (training) is needed; individuals are often prevented from using their knowledge and skills due to lack of confidence, anxiety, unwillingness, stress, wrong habits and confusion. According to Harvey&Butcher (1998) the development of individuals should improve personal practices (e.g. delegating and decision-making) and it should also lead to an improved working relationships.

6.3.4   Self development

IT executives move to the role of manager through a technical career, which involves working with computers more than humans. The role of the IT executive is technical in nature and they are stereotyped as lacking in flexibility and the ability to work with ambiguity, which characterises organisational politics. Patching&Chatam (1998) refers to IT executives as "politically naive". IT managers should refocus upon themselves as people and away from their roles as technical specialists. They must be trained to understand what motivate these employees so they can manage them in ways that encourage innovation, improve productivity and meet strategic goals. IT Managers therefore have to be trained to deal with employees who resist goals they did not help set. They should acknowledge if they have not acquired good people skills and recognise that such skills are vital. The personal development areas for IT executives are cognitive skills, self-knowledge, the ability to manage their emotions and personal drive. Better interpersonal development for senior IT executives will therefore make them more effective at board level, willing to develop the individuals they work with, able to improve interpersonal relationships, thereby enabling their organisation to better exploit Information Technology.

6.3.5   Motivating and empowering others

Apathy, or a lack of motivation is caused by frustration and feelings of powerlessness. IT employees must feel they control their own destiny if they are to be part of a change effort, provide excellent service or take risks. In the words of one of the research participants: "P*eople in the organisation have a common goal. This would mean that people no longer look at their own needs, but those of the organisation, as the organisational goal will benefit everyone."* Motivating people who deliver technology is different because the employees themselves are different, their work is different and traditional power is useless. Unrealistic project completion dates, coupled with continually changing requirements, users who don't know what they want, a lack of consistent and clear definition of the problems, high expectations in the face of limited resources and application complexity were mentioned by survey participants as major contributing factors toward IT/IS system failure. An effective IT leader will establish the objective, clarify the limits of authority and autonomy and enable individuals to take responsibility for the achievement of the objectives in their area. This will create a climate wherein both business- and IT employees would want to be involved in and totally committed to achieve the overall corporate goal.

6.3.6   Coaching

IT managers rated 'not enough emphasis on soft skills in the IT function' as significant and literature refers to the 'lack of leadership skills on the part of IT executives. Coaching can be used to address both types of problems. Coaching is an individual development intervention where a variety of behavioural techniques and methods are used to help employees improve their personal performance. However, it is important that coaches learn too and this process could help executives with a diagnosis of the real problem, not the symptoms only. As a method of self-development, as discussed above, IT executives could also turn to external coaching. This is perceived to be an effective development tool and is valued for its capacity to enable them to learn and develop, and thereby to enhance their personal and organisational effectiveness.

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6.3.7 Job design and work setting

Job design refers to the process by which IT managers design individual job tasks and authority – what employees are expected to do. For the past number of years, the high turnover of IS/IT staff (amplified in South Africa by the brain drain to other countries) has lead to discontinuities and the inability to attract and retain IT/IS resources with the required skills set. People work at their highest level and remain loyal to an organisation when they find meaning and challenge in their work and enjoy a sense of community and mutual respect. The well being of organisations and people therefore relates to how well management designs jobs to provide income and to provide meaningful life experiences, self-esteem and positive associations with others. The IT executive should strive toward providing a meaningful workplace for its staff members by

> ➢ challenging them to achieve
> ➢ recognising worthwhile work
> ➢ accepting the strengths and weaknesses of every individual
> ➢ building a sense of bonding and community
> ➢ being sensitive to their needs to care for- and spend time with their families
> ➢ treating employees with equality, justice and fairness

One of the research participants said "a*t the end of the day line managers and IT professionals are all managing people, technology and change. This needs to be communicated to people in a sufficient upfront manner so that people know what is expected of them, and if training would be required.*"

6.3.8 Job enrichment

The fact that IT skills become obsolete in a short period of time has always been a problem in the fast-changing ICT industry. This is a contributing factor to the problem of finding and retaining employees with the required technical skills. Job enrichment is a good way for employees to add variety to their work, to add new challenges to their jobs and to try out new skills for future career development. Job enrichment across disciplines

should be an effective method of bridging the gap between business units and the IS/IT function through 'knowledge transfer', 'mutual understanding', 'similar perceptions of what makes a good system' and a 'common vocabulary' – all factors regarded by both business- and IT managers amongst the most important issues in the business-IT relationship.

6.3.9   Succession planning

Finding and keeping technical professionals is not easy. In the financially competitive and technologically advanced business world, technical professionals are in great demand. Due to the high turnover in the IT industry, succession planning is an important focus are for the IT executive. When somebody leaves a company the company has to replace the individual, often from the outside. It could take long for a new employee to become productive. Such a lack of continuity has a negative impact on the productivity and competitiveness of an organisation. Employees who have been trained in more than one aspect of the business (e.g. through job enrichment) can play a major part in such transition period.

6.3.10 Organisational learning

The IT industry is a knowledge-intensive environment, and an important responsibility of IT executives is to manage the knowledge and develop the knowledge workers in their organisation, towards creating a learning organisation. One of the most important problems in the business-IT relationship, as identified by the survey, is the 'lack of knowledge transfer so that the person in IT gains knowledge of the business issues and can think of IT in the context of the business, and vice versa for business people'. In many organisations people move to different projects without transferring the knowledge they gained to their followers and learning lessons from past mistakes. IT executives should be educated to be involved in OD interventions, in stead of relying on training alone to create and transfer knowledge.

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6.3.11 Internal communication

An important responsibility of IT executives is to manage the internal communication with employees, including job-specific information and essential organisational information. IT executives who are focused on retaining a happy, effective workforce have to think about how they communicate with employees, as good and immediate communication can help stop rumours about IT that may damage a project or the relationship with other functional units. Literature refers to "adverse relationships", "rivalry" and "us versus them mentality". Effective internal communication also contributes to the successful implementation of change management programmes.

6.3.12 Culture change

Organisations should realise that there is a culture difference between business experts and IT professionals, which often leads to an adverse relationship between the two parties. An interview participant supported this in saying *"the IT manager and the business managers have different responsibilities and that is why they approach their daily jobs and challenges differently." Another commented: "This is very important!!! I think the gap between how IT executives think they are performing and how they are really performing is widening. This is a growing problem in organisations today and is probably the thing in the questionnaire that grabbed my attention the most!!!!!"* IT executives have to focus on the human element of IT and the cultural differences between business and IT groups and take steps to bridge the differences. If the assumptions, beliefs and normal behaviours of all employees in an organisation are aligned, it will result in an organisational culture with many success stories.

6.3.13 Interpersonal relationship management

Interpersonal relationship management is based on communication, trust and respect. During the survey the IT managers ranked 'lack of communication between IT and business' as the most important out of twenty-five categories and business managers ranked it second. In the words of one interviewee *"they don't see eye to eye"*. Within

this category the participant were unanimous that 'at the heart of the communication problem is the fact that business users understand their business at the business process level, while developers understand it in terms of data structures, etc.' Furthermore they agreed that clear communication processes between business and IT is a major problem in the relationship. Although the category 'IT management problems' were not rated high overall, both business and IT managers agreed that IT executives 'do not take up the responsibility to bridge the relationship gap between IT and business'. In the information age we live in today, it is vital that the IT employees work effectively with the rest of the business. An IT executive must manage satisfaction from multiple perspectives at once in a way that other executives do not (e.g. the CEO and the board of directors, external consultants, vendors, service providers, customers and suppliers).

6.3.14 Managing and developing diversity

If South African companies are to succeed, they must recognise the emergence of the diversified workforce and "find a way to harness its energies, talents and differences for tomorrow's challenges". The major groups that introduce diversity into the workforce are ethnic groups, women, young workers, workers with disabilities and workers with different sexual/affection orientation. The ability to recruit, select and manage a diverse IT workforce is necessary for organisational survival. For this, the IT executive should be flexible enough to adapt to other people's way of behaving and free of prejudice and stereotyping.

Another type of diversity, which pertains to the IT executive specifically, is that of technical employees with their specific characteristics and needs. In many cases technical professionals lack leadership skills and traditional leadership models fail to ensure successful technical leadership. IT executives should recognise that the personality and professional profiles of technical professionals are quite different from those of other occupational groups.

6.3.15 Strategic interventions

According to Frank F. Britt of IBM (2002) one of the most important prerequisites for achieving fusion in an organisation is equal involvement of business and the IS/IT function in strategy and business design. The IT executive is no longer a technocrat who keeps computer systems up and running, but is more likely to be a business-savvy strategic player who, in addition to information technology, is involved with planning, product development and sales and marketing. The survey results indicate that both IT and business managers regard 'lack of strategic alignment between IT and business' as an important contributing factor towards the relationship gap. IT executives also indicated that they are often 'not part of the strategy formulation team/board of directors'. One interview participant commented that he often has a "feeling of being left out in the dark". The involvement of the IT executive in strategic planning is important as they can make a significant contribution towards integrating IS/IT into the overall strategy of the organisation.

6.4   The role of the analyst

6.4.1   Analysts' viewpoint on relationship issues

The analysts who participated in the survey were also requested to identify the most important reasons for the business-IT gap. These results can be compared to the viewpoints of the business- and IT managers, as discussed in chapter 3. The analysts ranked the issues as follows:

Business analysts

The ten most important issues according to the respondents doing **business analysis** are:

Relationship issue
Lack of Communication between IT- and business
The real business need is not understood and solved (ineffective requirements specification)
Project scope changes (changing business needs / technology)
Lack of knowledge transfer between IT and the business (understanding each other)
Lack of shared goals and responsibility
Lack of business expert involvement in the process
People issues / behavioural issues / cultural issues (politics, power, culture)
Top management doesn't take ownership of the solution
Insufficient client expectation management
Project management issues (e.g. bad planning, risk management)

Systems analysts

The ten most important issues for respondents doing **systems analysis** are:

Relationship issue
IT Project issues (e.g. complexity, time scales)
Financial constraints (e.g. budgets, insufficient funds)
The real business need is not understood and solved (ineffective requirements specification)
Project scope changes (changing business needs /

technology)
Different perceptions of the measures of success
Lack of Communication between IT- and business
Poor documentation practices
Poor testing practices
Lack of strategic alignment between IT and business strategy
Lack of knowledge transfer between IT and the business (understanding each other)

Business and systems analysis

The ten most important issues according to the **business- and systems analysts** are:

Relationship issue
Project scope changes (changing business needs / technology)
Lack of Communication between IT- and business
The real business need is not understood and solved (ineffective requirements specification)
Insufficient client expectation management
Poor testing practices
Lack of strategic alignment between IT and business strategy
Lack of knowledge transfer between IT and the business (understanding each other)
Lack of business expert involvement in the process
Poor documentation practices
People issues / behavioural issues / cultural issues (politics, power, culture)

In summary the four most important reasons for relationship problems that were selected by all analysts are:

1. Lack of Communication between IT- and business
2. The real business need is not understood and solved (ineffective requirements specification)
3. Project scope changes (changing business needs / technology)
4. Lack of knowledge transfer between IT and the business (understanding each other)

All these issues directly relate to the role of the analyst.

Other important issues include:

➢ Insufficient client expectation management
➢ Lack of strategic alignment between IT and business strategy
➢ Lack of business expert involvement in the process
➢ Poor documentation practices
➢ Top management doesn't take ownership of the solution
➢ Lack of shared goals and responsibility

These results correlate well with those found in the first part of the research. The most important reasons for the relationship problems as identified by IT- and business managers as most important were:

1. The real business need is not understood and solved (ineffective requirements specification)
2. Lack of Communication between IT- and business
3. Project scope changes (changing business needs / technology)
4. Lack of shared goals and responsibility
5. Financial constraints (e.g. budgets, insufficient funds)
6. People issues / behavioural issues / cultural issues (politics, power, culture)

Comments made by people from the ICT industry are often very valuable to both lecturers responsible for training and learners wanting to enter into a career as an analyst

in the ICT field. Such comments are communicated to learners, thereby giving them a clear picture of the career path and job requirements of the different positions in this area. The following section summarises the role of the analyst in creating fusion as confirmed by the interviewees and focus group participants. Most of the comments concern the people issues (Organisational Behaviour issues) they face and the role they play as business- and/or systems analysts.

The interviewees and the participants of the focus group session are responsible for both business- and systems analysis. They work for the IT department of their organisation. The members of the focus group were programmers and IT specialists, but changes in the environment changed their major responsibility to analysis. These people were chosen for the focus group session, as they have insight into the world of the IT professional, as well as that of the analyst.

The interviewer did not guide the responses at all, except for asking the initial question about the people role of the analysts as they see it. The participants mentioned the issues as they entered their thoughts, without interruption by the interviewer. The comments were clustered in a number of major issues, completing the "big picture" of the role of the analyst. Direct comments are shown in italics.

6.4.2   Analysts' role in managing relationships

All the relationship issues identified by the participants confirm those identified in literature and through the questionnaires for managers and analysts. The comments made during the interviews and focus group sessions were analysed and clustered, yielding the following summary of the 20 major issues in creating fusion. The participants mentioned the following in the interviews [I1,I2] and focus group session [F1]:

6.4.2.1 It is difficult to get the correct information out of the users

The client has got an idea what he wants and often the client is not one person. The organisational structure of the client co-dictates the quality of the information you're

going to get. *If you're not aware of a break in communication* <at the client's organisation> *you're going to get piecemeal information and you'll think it's the whole picture. So the first thing you have to assess is what's happening on the other side* <at the client company>. [I1]

It is important to let the people feel they're not going to be redundant – they're going to be more important in driving the system. You will get more information and your job will be easier and you'll be able to give more info to your boss. The computer will do the schlep work, not the intelligent thinking. Then they don't want to work with you. [I2]

You have to optimise the flow of data. People must feel they have a role to play in the flow of data. If they don't trust you they wont help you to find out the info. If people are threatened they sabotage you. You have to get the people on your side. [I2]

6.4.2.2 Clients don't know what they want

A typical problem is: *They* <the clients> *are not talking to each other, but they're all talking to you – so have to bridge the gap. You have to get them talking to each other, if necessary.* [I1]

Users don't understand their own needs and the impact their decisions have on the rest of the infrastructure. *We have a central system. If people want more functionality they should buy what fits with the central system, even if it is a bit more expensive. The integration is extremely important, though.* [F1]

6.4.2.3 Scope creep is a major problem

Scope creep is a very serious issue in the lives of the analysts. There are internal and external issues surrounding scope creep.   On the one hand the user changes the scope and on the other hand management also shifts the goal posts as the project progresses. "*The managers in our own department organise new meetings with suppliers or clients – scope creep. This puts a new angle on the whole project and throws what has been done*

off the table. We shouldn't do ad hoc investigations else we'll have the problem of changing scope and projects being abandoned halfway through. It happens that we finish the case on a project and then we see an outside company about the project   After speaking to them, management then changes the whole approach. All we've done is now down the drain. If they don't draw the picture for us we should draw the picture". [F1]

The business analyst is not in the same position as the project manager to manage the scope – they don't have a say in the scope. The manager/technology officer dictates what has to be done. This is especially true if it is not managed as a project with a proper plan. *"You can do the whole thing and it takes you 6 months and you hear the project is stopped because there is not enough money."* [F1]

6.4.2.4 Client expectations have to be managed

It is important to define what the client defines as a working system, i.e. their expectations must be managed. *There is a gap between what the client expect and what they get. The business analyst must bridge this gap. He can't do all the soft stuff and walk away. He must at least understand it from the users point of view. The analyst is involved until after the system is delivered – he is still in a sense involved.   Often the analyst has to sell himself and explain what he can do. He has to create a role for himself, which is difficult. People don't always realise the value of the analyst role and that they need them.* [I1]

The client doesn't know what he's actually asking". [I1]

New expectations are created with the user. Customer's expectations are not managed properly – they don't know what they are going to get. "You get more info as you go on. The one thing you have to do is manage the clients expectations" [F1]

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6.4.2.5 The business need is most important

The IT, marketing and financial departments all know what they want but they don't think of the business flow – what info is available when. For example the IT guy puts fields as mandatory on the form, but the data is not available at that stage – the user won't want to use the system. The system must be designed around the process, not driven by the data. [I1]

The technical detail is invisible to the client – they only see the cost. It should be clear why the client must spend money on the system. You have to know what the clients need – an analogy to a car: they might just need a Mini to get from A to B and not a space shuttle with all the bells and whistles. [I1]

If you want to do fancy IT stuff, the business might not be interested. An IT system that doesn't work is more like a cancer than a doorstop. IT actually occupies space and time in people's minds and it becomes an irritation to them. IT must either work or get out. People think IT exists for and by itself, but it actually only exists for business use.

6.4.2.6 Communicating with users is important, yet challenging

Communication gaps seem to be a problem. *You must make sure that what he thinks and what he is saying and what he thinks he is saying and what you think he is saying is the same thing. If you take the communication issues out of the equation, an IT guy speaking to another IT guy, you have a better chance of understanding. Even within IT there are communication gaps, because they come from different backgrounds. They use the same words with a different understanding or different words with the same understanding. Words like 'testing' and 'commissioning' could be confusing if people understand them differently. Your background determines your scope of movement.* [I1]

Clients speak a different language from developers. It is actually dangerous if the client thinks he knows what language the system must be in. *You go and see the client to find out what is the benefit you want to get out of this system. Programmers are sometimes*

blind, but they miss all the subtle points. They have to be able to communicate with somebody who doesn't use the right words. The client won't say I want a database. He says I have a lot of customers in the field and they send me a lot of accounts and the lady in the accounts department takes two months to process one set of data and is getting behind - what can you do. The problem doesn't come in a modified form. [I1]

"There is a communication gap between the chief director and the technology manager. The wrong message gets passed on the business analyst. This creates a lot of frustration with the analyst. After doing a lot of work they ask you if it can't be changed." [F1]

6.4.2.7 Communicating with technical employees poses its own challenges

When I come back the technical guy tells me 50 reasons why the system is designed that way. An analyst has to generate options, to soften situations. He starts thinking his way out of the box - this is the only solution to this problem. Only then he realises that, for instance, the data may only be available at another stage, the database may not be populated and there is space available. When you go into a situation you have to determine what is negotiable and ask the question: 'If I take that out of the program will that help?' He is then happy and willing to work with you to solve the problems. Its like a success story from the back – were solving the problem from the top. The IT tail should never wag the business dog. That takes some selling to both the client and the technical guys. Technical guys get frustrated with the business people. The business people say if it doesn't' work they don't want it. [I1]

Technical guys are religious about the technology/language they use. They might be nervous about their jobs or training. You have to negotiate some time with the old project guy to teach the new guy. You have to negotiate your own organisational politics to know whom to talk to get things done. [I1]

The analyst must define the situation to such an extent that the technical guys can take it up. You can never say this is where my job stops and yours begin. There is an overlap. [I1]

The contact with the programmer is more exact. *You as the analyst will call the shots to a large extent. You have to have people skills – you will tell the programmer what to do but you want to give him the freedom to decide how he wants to do it. Not to be too prescriptive. In the small business the programmer will be allowed to use his own initiative. The analyst doesn't prescribe screens, etc. Programmers are usually individualistic and they don't like working in a team. You have to give them freedom, else they are only coders and they lose their initiative.* [I2]

6.4.2.8 Solid technical skills are important to build trust

When the client connects with you and you can convince him that you can solve at least some of his problems, he trusts you and you connect with him – there is a certain magic. Technical skills are very important to set up a relationship of trust. The he will walk a long way with you. Marketing is client focused and selling is product focus. Business analysts do sell and market, *but the relationship issues with the person come first. If you don't have a report with the person it's a waste of time. Sometimes being woman in a technical field is difficult – they don't actually believe you're capable.* [I1]

A business analyst has to be analytical and have logic thinking and see the big picture of a business. He has to have technical knowledge and be able to understand programming and what is possible in a computer program. You *shouldn't promise the client the sun and the moon and it is not possible to do. You have to be able to think on your feet. There is no recipe beforehand.* [I2]

6.4.2.9 The client and supplier relationships have to be managed

Analysts are project managers in a sense, although they're not called that. [I1]

You have a lot to do with creating. *It's not management of technical things, its management of people in a technical situation. You have existing relationships and you want to establish others. I can't walk to the client and not make a connection with him.*

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On the other hand I cannot tell him everything he wants to know and then not deliver because then I can't walk back in. I have to understand about negotiating – how much can I give him. [I1]

Get the person in present time, establish report with him and check that he gets the message correctly. Active listening is extremely important. Often you have to do therapy – e.g. bring his stress levels down before you can hear what he is saying. [I1]

IT employees don't always have the skills to manage the people issues. In the role of a business analyst this becomes a barrier to performance. *IT people are different from business people. We talk in straight lines and we're logical. Business people think we do not have any tact. We have to see both the business part and be the technical expert.* IT people definitely battle more with working with people. Technical people are different from other people. *We can all gain from soft skills training. We are impatient especially if people don't get to the point. Users often don't get to the point."* [F1]

There is a large gap between the business viewpoint and the systems viewpoint. "*People who are very people oriented are not interested in systems. Even though were not good with people we realise that we have to manage clients differently, depending on their needs. Some users want to check with you every day how far you are, etc. Another is happy with a one-page report every week. Relationship management is so important. You have to let the user think he's the only client you are working for."* [F1]

The relationship with suppliers is very important and relies heavily on effective communication. *Our relationship with our major supplier is extremely good. We have a coordinator who works on a project basis and all communication goes through her. "If the communication works well, the rest follows".* [F1]

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6.4.2.10   The analyst often produces non-tangible results

A lot of the job content has nothing to do with your output, which is strange. Your own *internal feedback loop* therefore has to be well established. For example *all I did today was talk to people and I didn't get my job done.* [I1]

Not all investigations have a IT system as product. It could be a hand system or no solution at all. However, an IT background seems to be an advantage for analysts.   *"We have to learn more to work with people but at least we understand the technology".* [F1]

The job of the business analyst is not always tangible and measurable.
"It is very frustrating for an analyst to spend all the time and then the project is canned. Everybody wants to know what we're doing with our time." Line managers expect us to have an answer in a very short time. *"They don't realise how much work goes into the answer and they ask too late. We need to cost our services so that we have an ideal of the worth of our services. Some managers won't do this, because there will be a cost involved if they make a bad decision. The user gets irritated if we don't produce immediately and they go out and buy their own stuff. Three months down the line they realise that it doesn't work for them. 90% of the users expect us to produce the result in two weeks. Only the investigation will take months. Sometimes the user is not available too. He goes overseas and you have to wait for him to come back. Sometimes I have to sit and wait for two weeks to see the user."* [F1]

6.4.2.11   The analysts' problems are not always structured

People issues are not structured – you have to bring wisdom to the situation. The same mind that wants to find the single logical path through the equation, wants to apply that same logic to the human equation, which doesn't work. The people situation is almost like 'connect the dots' but you don't know what the next dot is until your pen is on the number. You have to process one by one, until other issues come up. If you press the right button, another one lights up. And then you can process that. There is no recipe, step 1 to 10, beforehand.   [I1]

You have to be alert; you can only prepare a bit. I phone the account manager beforehand to find out what I have to watch for. He'll say the guy is not IT literate, or we can't afford to be put in such and such a situation, etc. Don't tell him we can do tomorrow, all our technical guys are on another project. Your situation at your company is also difficult and you have to see it in context. You shouldn't find it necessary to look for a recipe. If you select your students, you have to put them in situations where there is no structure. If they work through things not people, they will tell the client " listen this is what you want" It is not a way to generate more income from that customer. [I1]

6.4.2.12   Analysts need interpersonal skills like charm and charisma

One has to see what actually happens, not what they say happens. Analysts should not only speak to the managers, as they want to *present a good picture. You have to charm your way around managers to get to the people on the floor. Sometimes you even have to be a bit sneaky – but you want the best information you can get so that you can speak to your technical guys effectively. First you have to structure the work – for this you have to know what your technical guys are capable of.* [I1]

Interpersonal communication is a problem – it is always difficult to let people understand what you really mean. "*I've even taped a conversation once to be sure what was said. They* (the users) *are not in charge of their own environment and they want somebody to blame if the system doesn't work. If you tell them to change their processes they see it as a personal attack. For all the difficult customers we manage the work as a project. With some other users this is not necessary – they are the power users who understand what's going on and who are more computer literate. Most users look at the functional aspects they want, and are not system thinkers. They are scared of losing their power. They expect us to change the system to adapt to their ineffective system. It is difficult to keep everybody happy.* [F1]

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6.4.2.13   Conflict arises in the relationships

There is also conflict with the users. *They have their own picture of how things work. You have to educate them on how it really works. They don't realise that what they'll get from the system will be what they put into the system. Users are very short sighted. It is our task to educate and train the user – how does it work to use a system. We talk directly to the users.* [F1]

People in different departments have to work together. Personality differences complicate working with different people. *One example is a person who agrees with what you agree with him and then after the work has been done he sends a terrible email message and accuses you of doing different things. This is emotionally draining for an analyst. You have to realise you must handle this professionally and not with emotions. The only foot you have to stand on is your documentation. We handle everything via post and email.* [F1]

6.4.2.14 Analysts often have to practise Psychology

The relationships of a business analyst exist in a context and analysts have to get clients talking about their frustrations. *I won't just have tea with my client. We have a job to do but I have to do it in a way not to alienate him. As he talked I repeated to him - echo, reinforce and express my own frustration with the situation.   You have to break the barrier- if he doesn't tell me his problem I can't do a thing about it. Show me your problem is like asking somebody to show you his house. You're not going to show your house to anybody, even if it is the plumber. You have to set the pace and direction of the conversation. A lot of the people issue has to do with giving him space to dump his stuff.* [I1]

In a situation, when the analyst talks to somebody they have to assure them that they will understand better how to do their work. *You have to use a little bit of psychology. People feel that computer oriented people talk above their heads. A business analyst skill is to get people on his/her side to get the' nitty gritty' info. You will battle with the design*

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if you don't have all the info. A business analyst is not only a computer person. You don't have to be so technically strong, but more of a people person[I2].

6.4.2.15   Continuous learning is vital for organisations

The job market is shrinking, but the work market is not. We have to train people to cope in a work market that doesn't have a job for them. The continuous learning concept is important. [I1]

6.4.2.16   Organisational politics influences situations in organisations

There is much power play and politics in organisations. Employees in a business analyst position have a bit of power and sometimes people see them as a threat. *You will have political issues facing you. If you're a consultant it is different – you come in from the outside. If you're inside a large organisation you have to sell your product and ideas to people. They feel they should have thought of the idea. Sometimes people play games.* [I2]

Another topic was mentioned, namely corporate culture. *The old culture of the organisation was very different from the new one. We had a close relationship with the users, mostly as programmers. When we moved to the new software we had to learn new skills – we then became business analysts. We became more involved with the whole organisation and we now have a more business focus. There is a more formal link between our clients and us. Sometimes it seems as if the employers at our institution work for themselves, not for the company. This is why they all protect their own environment.* In the new culture *(after a merger process)* we'll have a more hierarchical structure and there will be a different work ethic. Things will happen slower. [F1]

6.4.2.17   Management problems also occur frequently

It is clear that management is often a problem. "*Management should understand what project management is all about. In everything the work should be seen as part of a*

project. Management only now commit for projects where there is money and time available. Previously they didn't understand. The management has to know what the job of the business analyst is – they don't know what were supposed to do." [F1]

There is a lot of conflict in the department, especially between management and employees. *The conflict is very prominent and gets "very verbal". We don't want conflict on things we do well. Managing conflict with peers is easier than conflict with your manager.* [F1]

You have to have the backing of management – they have to approve. It is important to convince management first – after that you target the people on ground level. [I2]

6.4.2.18   Users resist change

Some people issues will always be there, but there are too many unnecessary issues. Users can be part of the problems. *Users think they know more about IT than they do and then they want to prescribe to us how things should be done. We have a problem if users are not proud of their work. They don't take responsibility for the success of the project. They want to sit back and make it our problem. People don't like change, especially if they didn't initiate it themselves. Sometimes they even initiate the system and then they don't want to become involved in the testing. They expect us to do the testing. They also believe the system will take their jobs away from them. Change management is non-existent and up to now all the initiatives around change management have come from the IT department.* [F1]

6.4.2.19   Analysts often lack strategic awareness

The IT people do not seem to be involved in corporate strategy. *Strategically we never know what's going on. The IT manager is not on the executive management committee. We are represented on the steering committee and from there communications should take place to us. We rely on this comm. and were often not informed. Our IT director is powerless.* [F1]

It is frustrating if each department in the organisation can make their own decisions about which hardware, software and systems has to be bought. *All technology decisions should be done through us, else we cannot maintain and integrate systems. At our institution people buy what they want left and right and we have the problem of looking after it. Often we could have done things much cheaper and more efficient and then the users have signed long term contracts, etc. One department even put in their own network and we've got nothing to do with it .* [F1]

Sometimes the companies are enticed with the latest technology. *Sometimes it feels as if the organisation goes after the latest technology hype, without proper investigations to determine if it is the right thing to do. The project is then abandoned halfway through. The decisions are sometimes made because individuals have hidden agendas and they want to increase their power base. People pay a small amount to buy software and then we have to spend millions to adapt the software to integrate with out central system.* [F1]

6.4.2.20 Training users

Training the user in the use of the system is important. Sometimes the system works 100%, but the user doesn't understand the system. This is usually a problem if the business analyst and the client drift apart while the system is developed. . Involvement of the client is important throughout the project. *You are usually the middle-man in a team – you have to understand the business and the technology. You have to translate to the technical guy – I test his understanding the whole time. Does everybody understand what he should? Sometimes the client has a different view of his business than you. You have to communicate clearly to sort this out.* [I2]

Chapter 7 Summary and Conclusions

7.1 Introduction

Higher Education should continually be looking for better ways to meet the growing demands of an increasingly diverse learner population and strive to offer training that meets the needs of the ICT industry, includes the latest technology as part of the courses and gives the learner a broad enough base not to be stranded when product technology changes drastically. Learners should be empowered to grow toward whole, mature human beings who are productive immediately after completing the degree/diploma and who can learn and quickly adapt to new circumstances and new technology.

A central element of Higher Education institutions meeting the needs of the ICT industry is the promotion of links with this industry to enhance the skills and abilities of graduates. Learners can only make the right career decision if they are informed about the characteristics of the ICT industry and the skills expected of employees within this industry. In the context of such higher education/industry relationship, lecturing staff should be involved in determining what changes take place in organisations in general and their own specialist area of the ICT industry in particular. They should determine the various career options in the industry and the characteristics of each (e.g. job description, compensation, etc.). The required profile of these professionals following these careers should be investigated and course structures and module contents should be designed accordingly. Prospective and current learners (as well as other stakeholders) should then be kept informed through various means.

At the Tshwane University of Technology we are especially concerned with the interface between the IS/IT function and the rest of the business.

7.2 The business-IT gap

This research aimed to investigate the gap between the two stakeholder groups (business and the IS/IT function), the elements of fusion in the relationship and the role-players in creating fusion. There are many reasons for the business-IT expectation gap. All the reasons for the business-IT 'expectation gap' were grouped into 25 categories. Each category contains a number of related issues. Business- and IT managers had to identify the most significant categories impacting on the business-IT relationship. According to IT managers, the ten most important categories are:

1. Lack of Communication between IT- and business
2. Project scope changes (changing business needs / technology)
3. The real business need is not understood and solved (ineffective requirements specification)
4. Lack of strategic alignment between IT and business strategy
5. Financial constraints (e.g. budgets, insufficient funds)
6. People issues / behavioural issues / cultural issues (politics, power, culture)
7. Lack of user involvement
8. Lack of shared goals
9. Lack of shared responsibility
10. IT manager/CIO not part of strategy formulation team/board of directors

Business managers rated almost exactly the same categories of issues as important. They also regard the lack of communication, scope changes, lack of shared goals and responsibilities, lack of strategic alignment and financial constraints as important. Business managers rated '*The real business need is not understood and solved*' as the most significant and they also believe the expectations of clients and users are not managed well. This is closely linked to the category '*Different perceptions of the measures of success*', where business managers indicate that IS/IT might think the project was a success, whereas the business side is disappointed in the result. On the other hand, business managers do realise that scope change is a major contributor towards the failure of IS systems. Business managers are also concerned about the lack of knowledge transfer between the IS and business experts. This is an indication that they don't

understand the world of IS/IT. Furthermore, the business managers did not rate insufficient skills, attributes and abilities of IT personnel as under the ten most significant issues, whereas IT managers believe it is an important contributor towards IS/IT project failure.

IT managers believe the user is not involved enough and that people issues have a significant influence on the success of projects and the relationship between business and IT. This supports the notion that IT people are not naturally good at managing people issues and organisational politics. It is also a problem if the IT manager is not a member of the board of directors and therefore has no say in the overall strategy of the organisation. This correlates with the results obtained from the personal interviews. When asked whether their IT manager is part of the corporate strategising team, only 49% of the interviewees said that he is involved in the strategy creation process, mostly in advising capacity.

The business- and systems analysts ranked the significance of the categories as follows:
1. Project scope changes (changing business needs / technology)
2. Lack of Communication between IT- and business
3. The real business need is not understood and solved (ineffective requirements specification)
4. Insufficient client expectation management
5. Poor testing practices
6. Lack of strategic alignment between IT and business strategy
7. Lack of knowledge transfer between IT and the business (understanding each other)
8. Lack of business expert involvement in the process
9. Poor documentation practices
10. People issues / behavioural issues / cultural issues (politics, power, culture)

It is noteworthy that there are only slight differences between their ranking and that of the IT managers. The analysts believe that poor documentation and testing practices lead to project failure (both important parts of their responsibility). They also rate people issues

as significant contributors towards failed systems and believe the business expert is not involved enough (the IT managers believed the users are not involved enough). Analysts did not regard financial constraints as an important issues, whereas this is clearly a problem for both IT and business managers.

In summary, it is very clear that ineffective requirement specification, scope creep and a lack of effective communication are the most important contributors towards IS/IT project failure and relationship problems between business and IS/IT.

7.3   Fusion and the role-players who creating fusion

The traditional model of strategic alignment is probably not enough to close the business-IT gap. Firstly, the word alignment suggests a linear process of creating the business strategy, followed by the IT strategy. Such traditional alignment is not enough to ensure successful IT implementations. The strategic alignment model therefore no longer provides companies with the correct answers to the problems in a fast-changing environment such as ICT.   A new approach is needed – a "higher level of alignment", also termed "fusion". Such fusion has to be achieved on all levels of the organisation (strategic, tactical and operational). After the investigation into the business-IT gap, the elements of fusion and the role-players in creating such fusion were therefore investigated.

Fusion between the customer (client/end user) and the IT professionals will only materialise if the following conditions are adhered to:

1. The needs of the client are solved through an IT implementation. For this it is necessary that the real need is identified and documented properly before the solution is designed, coded and implemented. The users should be involved in the problem definition, planning and design process and IT has to do things right from there. Effective documentation is needed, as well as timely testing procedures. A very important aspect of solving the business need is that both business and IT partners should have realistic expectations and similar definitions of success.

2. Successful ongoing 'partnerships' are forged between IT and business units as well as interpersonal relationships between the various stakeholders in the IT/Business relationship. This would lead to a learning organisation where the user and the technical specialist understand each other's world and take shared responsibility for the success of IT implementations. Such healthy relationships, based on trust, empathy and mutual respect, would lead to greater customer value and profitability.   Both management and the users should be involved and should take responsibility for project success. Effective communication is important and the mistakes made in one project should not be repeated in follow-up projects (i.e. there should be knowledge transfer from one project to the next. IT leaders should manage the unique characteristics of the IT environment and the IT professional.

There are a number of important role-players responsible for the creation of fusion. The research proved that failures of software projects are often a result of shortcomings on the requirements analysis level. The business analyst and/or systems analyst are therefore important role-players. In many cases one person fulfils both these roles. From the professional profile of the analyst, we know that requirements gathering starts with communication between the analyst and client. Given the emphasis on communication problems as one of the major reasons for the business-IT gap, this is not a simple process. The analyst has to interpret the needs of the client and create a reality for a new system. If the requirements are not understood the system will probably fail to fulfil the need of the client.

Analysts are responsible for extracting and documenting user requirements, identifying needs for new information systems and/or –technology, evaluating different solutions, analysing/recording existing business administration processes, determining the impact of new systems on the business and activity diagrams. They work with concepts like process flow charts / swim lanes, value chains / end-to-end processes, documentation of each task in detail with data, controls and business rules, entity relationship diagrams / logical data models, functional decomposition and business event data flow diagrams.

The most important technical skills required of analysts are Visual Basic programming, Hypertext Mark-up language (HTML), Enterprise Resource Planning Software, Java programming, MS Query and MS FrontPage (web page design software). Furthermore they need knowledge of relational databases, data modelling, the Software lifecycle (SDLC), database management, quality management, object oriented analysis/development, Strategic thinking and risk assessment.

The non-technical skills needed by analysts are analytical skills, business sense, detailed problem solving skills, written communication skills, listening skills, teamwork and – leadership skills, facilitation skills and the ability to communicate with non-technical users. In terms of personal attributes, analysts have to be proactive, self-motivated, flexible, open-minded and adaptive. They need initiative and sound judgement. Being a team player is also a very important attribute for an analyst. There is a need for a professional body and a body of knowledge for analysts. Such a body of knowledge should clearly define the generic set of analyst skills, as well as the skills distinguishing the two types of analysts from each other.

Another important role player in the business-IT relationship is the IT executive, whose role is also changing. Organisations are undergoing significant restructuring in response to increased competition and accountability. The IT function is highly involved in these changes due to a growing reliance on IT, increased awareness of the potential of IT to facilitate business process reengineering and the rapid rate of change in the technology itself. Significant change requires special leadership capabilities of the change agent and the role of IT executives and Chief Information Officers (CIO's) should never be underestimated in creating fusion. Business and IT leaders must feel comfortable in one another's domain. IT leaders need to develop a more participative, people-oriented style. In return, business must treat the IT function as both a creator of value and an important partner in designing the organisation's strategy. Effective interpersonal relationships will create a 'fusion culture' in organisations.

The radical organisational change is therefore extending the responsibility for organisational development beyond the external OD consultant to functional managers

who combine these responsibilities with their existing operational, professional or technical roles. OD is concerned with change that will integrate individual needs with organisational goals, lead to greater organisational effectiveness through better utilisation of resources, especially human resources, and provide more involvement or organisation members in the decisions that directly affect them and their working conditions. Aspects of OD for which the IT executive should take responsibility to create fusion are:

- ➢ change management
- ➢ developing individuals
- ➢ self-development
- ➢ motivating and empowering others
- ➢ coaching
- ➢ job design and work setting
- ➢ job enrichment
- ➢ succession planning
- ➢ organisational learning
- ➢ internal communication
- ➢ interpersonal relationship management
- ➢ managing and developing cultural diversity a
- ➢ strategic interventions

In summary, the criteria for fusion and the most important role player(s) in meeting the criteria are shown in table 7.1. The following abbreviations are used in the table:

ITM   - IT executive

BM   - Business manager

BASA - Business/systems analyst

Criteria for fusion	Major role-player
The IT department and the business client have the same goals	ITM, BM, BASA
Both the business and IT representatives take responsibility for project success	ITM, BM, BASA
Users are involved in the problem definition, planning and design	BASA

The IT function solves the real business need, not only what they perceive as the need	BASA
Business clients and IT professionals understand each other's worlds and speak a common language	ITM, BM, BASA
Business clients and IT professionals have realistic expectations of the other's performance	ITM, BM, BASA
Clear communication between the parties	BASA
Effective documentation	BASA
Effective and timely testing, involving the client	BASA
Interpersonal relationships based on trust, empathy and respect	ITM, BM, BASA
The business strategy and the business strategy are developed to support each other	ITM, BM
Knowledge transfer from one project to the next	BASA
Management involvement and good leadership - that is supportive of change and technological advancement - on both top management and project management levels	ITM, BM
An organisational culture that is supportive of technology	ITM, BM
IT leaders who understand and accommodate the unique characteristics of the IT and the IT professional	ITM

Table 7.1

The results can be represented in the framework as follows:

Section 1: Business-IT gap

Business units

Reasons for the gap:

Lack of Communication between IT- and business

Project scope changes (changing business needs / technology)

Ineffective requirements specification

Lack of strategic alignment Financial constraints

People / behavioural issues / cultural issues

Lack of user involvement

Lack of shared goals

Lack of shared responsibility

IT manager/CIO not part of strategy formulation team/board of directors

IS/IT function

Fusion

Criteria for business-IT fusion

1. The IT department and the business client have the same goals
2. Both the business and IT representatives take responsibility for project success
3. Users are involved in the problem definition, planning and design process
4. The IT function solves the real business need, not only what they perceive as the need
5. Business clients and IT professionals understand each other's worlds and speak a common language
6. Business clients and IT professionals have realistic expectations of the other's performance
7. Clear communication between the parties
8. Effective documentation
9. Effective and timely testing, involving the client
10. Interpersonal relationships are based on trust, empathy and mutual respect
11. The business strategy and the business strategy are developed to support each other
12. Knowledge transfer from one project to the next
13. Management involvement and good leadership - that is supportive of change and technological advancement - on both top management and project management levels
14. An organisational culture that is supportive of technology
15. IT leaders who understand and accommodate the unique characteristics of the IT environment and the IT professional

Fusion

Business/systems analyst ➡️ | **Business units** | **IS/IT function** | ⬅️ **IT executive**

Role players

Analyst

Responsibilities
Extract and document user requirements
Identify needs for new information systems and/or -technology
Evaluate different solutions
Analyse/record existing business administration processes
Determine the impact of new systems on the business
Activity diagrams
Concepts used
Process flow charts / swim lanes
Value chains / end-to-end processes
Documentation of each task in detail with data, controls and business rules
Entity relationship diagram / logical data model
Functional decomposition
Business event data flow diagrams
Technical skills
MS Office, MS Project, Data modelling tools, SQL
Knowledge
Relational database, Data modelling, Software lifecycle (SDLC), Database management, Quality management
Object oriented analysis/development, Strategic thinking
Risk assessment
Non-technical skills
Analytical skills, Business sense, Detailed problem solving skills, Written communication skills, Listening skills
Teamwork and –leadership, Facilitation skills
Ability to communicate with non-technical users
Attributes
Proactive, Self-motivated, Sound judgement, Initiative
Team player, Flexible and adaptive, Open-minded

IT executive

OD responsibilities

Change management
Developing individuals
Self-development
Motivating and empowering others
Coaching
Job design and work setting
Job enrichment
Succession planning
Organisational learning
Internal communication
Interpersonal relationship management
Managing and developing cultural diversity
Strategic interventions

New skills
Intra-personal skills
Interpersonal skills
General consultation skills
Organisation development theory

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7.4   Limitations of the study

Due to the large number of IT related industries and the time and distance restriction, only companies in the Gauteng region have been included in the study. This, as well as the relatively small sample size, limits the generalisation possibilities of the findings.

The content analysis to determine the profile of analysts was based on job advertisements, amongst others. It should be noted that writers of advertisements have to balance the need for a limited, manageable response with convincing those with the required skills to abandon their current positions. The main limitations of using job advertisements as source data, are their incompleteness – for example the required qualifications may be omitted to save space because it can be assumed as a given on the CV's requested - and that many positions are never advertised because they are filled internally or directly through recruitment agencies. However, job advertisements do illustrate the strength of demand for certain skills and the implications this may have for a particular occupational group.

The fast changes in the IT field does not allow for long, drawn-out investigations into the requirements of the industry, as this would lead to outdated results. It is difficult to organise focus group meetings and personal interviews with IT professionals, due to their busy schedules. The number of sources referenced can also lead to slightly biased results.

The framework has not been verified in the ICT industry yet. This will be done in follow-up research projects.

7.5   Future research

A framework approach was selected for this research, as this would be advantageous to the whole department of Business Applications and IT management, including the researcher as manager, the staff as content specialists and the students as potential

researchers and prospective IT employees. Such a framework includes aspects from many different disciplines and serves as a starting point for a body of knowledge regarding the role players in the business-IT interface. Identification of the issues will open up many research opportunities and topics in various study areas, for lecturers and students to further their studies and add to the body of knowledge of the Department. For these reasons the framework will be a dynamic entity, which will expand and be improved by results from follow-up research - as staff and students investigate the issues in more depth. This project has, and will continue in future, spawned a number of new projects in this field and opened up many research opportunities. This creates a "safe environment" of focused research for stakeholders within the department.

As head of the Department of Business Applications and IT management, it is also important that the researcher has a clear "big picture" of the issues within the business-IT interface and the role-players in this relationship. The students studying in this department are trained especially to manage this interface. Apart from providing a basis for focused research projects of staff and students, the framework will identify the important aspects of the business-IT relationship. The topics should be covered in the various courses and addressed in the teaching methods towards preparing the right product for industry.

Possible areas for further research are:
- Developing a measurement instrument for fusion in the business-IT interface
- A business strategy to promote fusion
- Fusion within the IT functions (i.e. internal fusion)
- Case study to measure the degree of fusion in South African organisations
- The influence of outsourcing/in-house development on fusion in the client-IT relationship

Follow-up research on the business and systems analysis can be done, based on the results of this research, including:
- What are the major differences between business analysis and systems analysis?

- ➢ Where does business analysis start and where does it stop?
- ➢ Can the same person do both types of analysis?
- ➢ Some people do all of the analysis, project management, risk analysis, business process re-engineering, et cetera. Is this desirable?
- ➢ Do we really need analysts in organisations at all?
- ➢ Are there projects where analysts are not necessary?
- ➢ What about companies mostly running on legacy systems?
- ➢ Can the skills of analysis be taught regardless of the person's background (IT or business background)