In the mid 1990's and through to the millennium, there will not only be the current, but certainly numerous additional influences which need to be managed effectively to satisfy the demands and expectations of both the business and customer communities.
The organisation needs to position itself to correctly forecast and address the impact of these current and future IT issues and implement the correct resource, support and infrastructural management methods.

Planning and opportunity time-frames will be drastically reduced, necessitating swift actions to be taken to cater for wide-ranging and complex eventualities.
The researcher suggests the following as examples of the many critical issues that are presently and will in the future, be facing local IT management:

- business and IT alignment
- outsourcing
- skills shortages
- poor foreign exchange trading conditions
- networking infrastructure
- global competition
- sophisticated business expectations
- business process re-engineering and transformation
- pressure to contain and reduce costs etc.

These identified issues will clearly necessitate a paradigm shift in respect of the traditional IT and organisational management methods and priorities.
Although the qualitative information for the research was obtained from one particular institution, the findings should be considered as having relevance and benefit, to all participants in local industry.

The relevancy of systems types within different organisations, is illustrated in Figure 1, the Mcfarlan (1984) strategic grid, which considers the contribution of IT, based on industry impact.

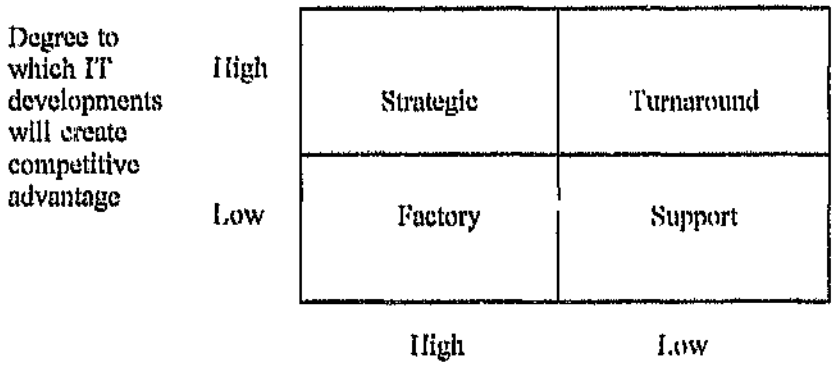

Figure 1. McFarlan's Strategic Matrix

The future cannot be predicted with absolute certainty, therefore unexpected issues, which could divert attention from what we identify as key issues today, will more than likely emerge. However, we know today that the performance of IT will be key and crucial to organisational success.

Straub and Wetherbe (1989), contend that,

> *"The implementation of efficient and effective IT will be crucial for meeting the challenge of organisational success and prosperity in the 1990's and early 2000's."*

In the current South African environment, we are faced not only with extraordinary worldwide technological developments and trends, but also issues perhaps unique to ourselves, such as the poor economic climate, affirmative action, skills shortages and increased local and foreign competitiveness.

There are today many complex challenges and critical issues confronting IT management and will continue to do so in the years to come.

These issues are varied and encompass the entire IT and business function interrelationships, which includes significant transformation and evolutionary influences such as technology advancement, socio-economic and business transformation (Rockart and Short 1989).
The exponential and increasing speed of progress in the IT field, will more than likely see an escalation in the number and complexity level of issues requiring urgent attention from IT management.

Literature covering IT management issues by and large reference history, however the majority of these issues are still relevant today. Organisations will address issues which affect their own particular line of business and as a result, a generic list of issues will not pertain to every organisation. Many issues, which are irrelevant for a particular organisation today, could become relevant for the same organisation tomorrow.

Much depends on the maturity level of the organisation and the role and importance placed on the IT function. The organisation, that operates on both the leading edge of the business spectrum and technology utilisation, will have different issues of importance to those that merely use technology to improve operational effectiveness.

1. Introduction

1.1 Orientation

Information Technology (IT) is heading toward the millennium with many complex social and business changes occurring worldwide. During the ensuing years, IT management will be facing many issues which could determine the future levels of success or failure of their respective organisations.

The aim of this research study is to determine and analyse the current, most critical issues facing IT management at a major financial institution in South Africa, namely, First National Bank of Southern Africa Limited (FNB).

Much has previously been written on this subject. However, the information and findings have been based largely on international issues and trends. What is of particular relevance and is emphasised in this study, are the critical issues and factors influencing the local IT industry.

The researcher is of the opinion that although these critical issues should definitely be considered of great importance to all participants in the broader IT industry, critical issues particular and relevant to each organisation, will vary and result in different strategies.

Factors which have an impact on such differences are, for example:

- the chosen market or sector of industry
- the organisational strategy
- availability of resources and skills
- technical infrastructure
- extent of geographical location and international representation
- communications infrastructure
- foreign exchange and trading conditions
- competitive forces
- maturity of existing IT implementation etc.

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ABSTRACT

The aim of this research is to determine and analyse the most important critical issues facing Information Technology (IT) Management at a major financial institution in South Africa, namely. First National Bank of Southern Africa Limited (FNB).

Much has previously been written and researched on this subject. However, the information and findings has been based largely on international issues and trends. What is of particular relevance and is emphasised in this research, are factors influencing the local IT industry trends and critical issues in South Africa. Not only are we faced with the traditionally accepted industry-wide challenges, but there are certain issues and market conditions that could be considered unique to the local IT industry.

Conclusions derived from this research will provide factual data detailing what is currently considered as the most important critical issues at this particular financial institution. These will be ranked in order of importance as rated by a respondent group.
The information analysed was obtained by means of questionnaires and interviews with a group of IT professionals from FNB.

Although this qualitative information was obtained from one particular institution, the findings are considered as having relevance and benefit to all participants in the local IT industry.

ACKNOWLEDGEMENTS

The insight and efforts of all the respondents who participated in this research is greatly appreciated. Their contributions and individual perspectives were vital input to the research. As requested, anonymity regarding their points of view and inputs provided was respected.

Frances Sutherland for her assistance throughout the full two-year study period.

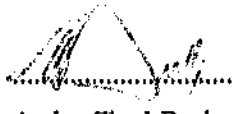
Ian Steer for his advice and guidance in preparing this research document.

To my wife Sandra and our daughters Michelle and Nicola, for their understanding, support and encouragement, throughout the last two years.

DECLARATION

I declare that this research report is my own unaided work. It is being submitted in partial fulfilment for the degree of Master of Commerce at the University of the Witwatersrand, Johannesburg.

This report has not been submitted before for any degree or examination at any other university.

Signature: 

Name: Andre Charl Beukes

Date: 12 October 1997

Revised: 19 February 1998

ORGANISATIONAL IMPACT: CRITICAL ISSUES FACING INFORMATION TECHNOLOGY MANAGEMENT AT A FINANCIAL INSTITUTION IN SOUTH AFRICA

AUTHOR: ANDRE CHARL BEUKES

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

It is essential that the critical issues are identified and thereafter prioritised in terms of those considered as being of most importance.

It is improbable that a fully comprehensive list of all the critical issues can be addressed effectively by the organisation, therefore as an example, between five and seven of the most important issues should be critically evaluated and formal projects initiated accordingly. The number of issues selected will obviously depend on the potential severity of the issue and the resources available for allocation to these projects.

The researcher suggests that the identification of the various critical issues, would, in all likelihood, be similar for most organisations operating in a particular sector of industry. The priority of these issues would, however, in most instances be different, in order to support specific organisational strategic initiatives.

The inherent maturity levels and focus of both IT and the business, will greatly influence and determine priorities for and impact, on each independent organisation.

2.4 Summary

It is evident from the selected examples above that there are many critical issues facing the IT industry, demanding careful evaluation and sound strategy formulation and implementation. These demands, now more than ever, need to be effectively delivered, by IT being well positioned to cope with organisation specific critical issues and impact.

The researcher, through association with the financial services IT industry, suggests that there are different, ever changing and evolving critical issues facing IT management today. These change regularly within the dynamic business environment, which ultimately has further and at times dramatic impact on IT.
Many organisations are aware of these critical issues, but have no proactive strategies or plans in place to address the possible adverse impact these can, and do, have on the business.

Indications from the information reviewed and the researcher's own experience of IT management is that the following topics will be identified as being amongst the most critical issues facing IT management and will form the basis of the research theoretical conjecture:

- improved costing and overall benefit analysis
- skills shortages.
- alignment of IT with the business
- outsourcing of IT services
- effective human resource management
- implementing appropriate technology infrastructures.

The researcher suggests that an assessment of these critical issues, should take place periodically and as a matter of course, be formalised and included as part of setting and reviewing the organisational strategic direction.
In the current volatile market there is constant change and most often the critical issues facing IT and the business is not fully understood.
Indications are that in many cases there is indeed high level awareness of these issues within organisations, but with no formal goals or objectives defined to manage and address the possible impacts.

Hammer and Champy (1993), suggest that business re-engineering will assume fundamental reassessment and radical redesign of business processes. Areas targeted for improvement will include costs, service, quality and speed of deliverables.

The management function will change, as will the role and responsibility of business involvement. The value-chain model if adopted, will require more of a team-based approach to IT project management and user participation. Re-learning and re-skilling will become the norm, with both dramatic and even traumatic impact on the organisation.
The resultant need for and the power of cultural change, must not be underestimated.
Drew (1994), warns of this and asserts that individuals will often become stressed from having to cope simultaneously with increased workloads and technological change.

Due to increased pressures to deliver more quickly and more cost effectively, the current trend of outsourcing is another important issue facing IT management (Gupta and Gupta 1992).
Lacity, Hirschheim and Willcocks (1994), suggest that full, or partial outsourcing, should be carefully evaluated as many organisations have been unsuccessful in adopting this approach.

Ives and Jarvenpaa (1991), contend that globalisation will require an upheaval in the organisation, through efforts to support the requirements of different cultures and nationalities.
Changes in technologies and business opportunities will impact on the organisation, as these changes are implemented to support global information and business strategies (Karimi and Konsynski 1991).
The impact of broader IT utilisation will have profound repercussions in respect of the actual numbers and roles of management resources. They will be forced to change their culture, together with that of the organisation (O'Neill 1990; Pinsonneault and Kraemer 1993).

IT responsiveness and flexibility in addressing business needs will in the future be of paramount importance (Hamel and Prahalad 1993).
IT departments themselves are also having to deal with constant changes which occur at an unprecedented pace, as they are being inundated with new technologies offering potential competitive advantage (Boar 1993).

Semich (1994), asserts that IT investments are increasingly being questioned by corporate management in respect of the added-value and revenue benefits realised by the organisation. Porter and Millar (1985), contend that a company is profitable if the value it creates exceeds the cost of performing the value activities. These activities must be performed at a lower cost, or be performed in a manner that leads to differentiation or premium price.
It is further suggested that IT is changing the business, firstly, in the industry structure, secondly, the leverage through IT to create a competitive edge and thirdly, spawning entirely new businesses.

Silk (1990), suggests that in theory, the generic benefits of IT, namely efficiency, effectiveness and strategic advantage, can be assessed in terms of financial benefits. This is, however, increasingly difficult due to the growing importance of soft benefits and the rapidly changing business environments.
Information should be seen as a resource and IT as an investment, which has shifted competitiveness, requiring speed and quality of decision making.

Hamilton and Chervany (1981), contend that evaluations of management information systems are mostly subjective and based on perceptions related to system objectives. These assessments are therefore often controversial areas of disagreement and conflict between users, systems development and top management.

Parker, Benson and Trainor (1988), suggest a number of techniques for evaluating business value, rather than the traditional view of strict economic benefits, whilst Remenyi, Money and Twite (1993), discuss why the determination of IT benefits to the organisation is of increasingly significant importance. Katz (1993), further suggests that business success is not necessarily related to levels of IT investment.
How to adopt appropriate measures to assist in evaluating IT's performance, is currently widely accepted as being of high priority requiring focused attention.
The modern trend to re-engineer the business will have a severe impact on the role and responsibility of the IT departments, as the reliance and demands placed on them by the business increases.

This survey reflects the views of more than two-hundred SIM members and is a continuation of previous surveys published by Ball and Harris (1982); Dickson, Leitheiser, Nechis and Wetherbe (1984); Brancheau, Janz and Wetherbe (1996); Niederman, Brancheau and Wetherbe (1991).

According to the 1996 SIM survey the most prominent issues are:

- building a responsive IT infrastructure
- facilitating and managing business process redesign
- developing and managing distributed systems
- developing and implementing an information architecture
- planning and managing communications networks.

Research undertaken locally by Remenyi and Sutherland (1993), concluded that at the time, the following were considered the most important issues requiring attention:

- executive information systems
- local area networks
- distributed databases.

Benjamin and Blunt (1992), contend that the IT function at the turn of the century will evolve as a hybrid, as manager of the infrastructure and advisor to senior executives and end-users. A number of important challenges highlighted by them include:

- financial and infrastructure management
- new application architectures
- business re-engineering
- revised systems development strategies.

Remenyi (1993), further suggests an action program in the mid-1990's to focus on the following:

- reducing IT costs
- increasing the benefits of IT
- developing internal partnerships.

Tapscott and Caston (1993), contend that:

> *"While many complex and significant technical issues must be overcome, the research showed that the main difficulties were not in the area of technology. Rather the organizational structures for managing computing, along with the knowledge, skills, resource base, approaches to systems planning, and even organisational culture, were being challenged by the new era."*

Ward and Griffiths (1996), suggest that there are various stimuli that have an effect on the aims and objectives of planning. There are external/internal business and/or technical factors influencing the situation in an organisation. The social and/or legislative environment may be different from company to company, industry to industry, country to country and therefore the key issues and the associated rankings will vary.

Because of the many critical issues and the differing levels of importance weighting and the fact that the issues and weights vary over time, it is of outmost importance that IT plans and strategies are directly linked to the business unit/corporation's objectives and strategies.
Niederman, Brancheau and Wetherbe (1991), suggest that the developing capability of IT coincides with changes in the business environment.
This ultimately places demands on IT for quality information, support for innovative business requirements and system flexibility. Their research findings concluded, that at the time, the following were the most important issues:

- developing an information architecture
- making effective use of the data resource
- improving information systems strategic planning.

Results from a recent study conducted on behalf of the Society for Information Management (SIM) by Brancheau, Janz and Wetherbe (1996), indicated twenty issues listed in rank of importance.

Benjamin and Blunt (1992), reviewed the predictions made in 1980, to show the degree with which earlier predictions were realised, prior to highlighting some key challenges for IT management in the next decade. Generally they felt that technology predictions were too conservative, whilst predictions which require organisational change were too optimistic. Benjamin and Blunt (1992), made several assumptions which they believe will drive technology into the next millennium:

- cost performance will improve by two orders of magnitude
- all computers will be interconnected via high bandwidth networks
- client-server will be the standard architectural model
- standards for interconnection and inter-operability will be developed
- major IT infrastructural investments will be the order of the day.

As much as there will be technology drivers, there will also be the business drivers such as the globalisation of business, changing global labour market and the increasing volatility of business environments. These business forces, will ensure a sustained growth in new applications and a continuing interest by senior management as to how the IT budget is allocated.

Benjamin and Blunt (1992), contend that the key IT challenges for the decade will be:

- managing the evolving infrastructure
- managing infrastructural funding
- moving toward new application architectures necessary to transform the organisational business and decision-making processes
- addressing the implications of managing organisational change
- managing the new buy-versus-make paradigm.

It is evident from the literature, that the fundamental changes in the business world, together with the progress of technology, will bring about major challenges for organisations.

2.3 The Ever Changing IT Environment

Service, communications and information technologies, are key to competitive banking and is a factor that distinguishes one bank from another. Appropriate technology allows for customer needs to be met, but should continuously be reviewed and upgraded to provide a leading-edge in service and management of information. IT is no longer considered a mere support function and has significant impact on customer perception, business growth and ultimately the bottom-line profits of the organisation.

Issues facing IT management, changes with frightening regularity. Previous research indicates consistent differences in respect of importance rankings. It is evident and quite obvious that these issues will change, as new business developments are identified and technological innovation and improved sophistication are achieved.

An early survey undertaken by Silk (1989), indicated the following major important issues as identified by IT management in the period 1987-88:

- general impact of IT on the organisation
- IT strategy to be aligned with business strategy
- maintaining electronic data security
- managing the IT function
- justifying IT investment.

A further survey undertaken by Silk (1990), listed the same five issues as the most important, but with the justification of IT investment, becoming more prominent. This trend is supportive of the move from easily identifying cost savings achieved with the early efficiency systems, to the more strategic or competitive edge increased revenue, or profit-based systems of the 1980's.

It stands to reason that an issue, which is of critical importance in an organisation where IT is of strategic importance, for example a financial institution, may not be significant for an organisation which merely deploys IT for operational support purposes.

The existing business processes that have served well over the previous years are also being critically examined.

These are being evaluated to assess the suitability to deliver what is required to enable FNB to compete effectively in today's business climate. In certain cases the current business processes and IT architectures cannot provide the bank with the flexibility and resilience needed, to deliver the desired service levels to customers. The many production systems developed over the years were designed to address specific requirements. Integration and coexistence were in many instances not considered. Consequently, many core systems have become difficult and cumbersome to maintain, resulting in restricted ability to respond to market changes or to innovate with new products and services.

The bank must continually move forward to maintain or increase market-share and profitability, which requires increased integration of systems, whilst creating sound IT architectural building blocks for the future.

It is evident from the literature that the financial industry is critically reliant on IT to provide sophisticated systems to meet internal as well as external pressures to achieve improved levels of responsiveness, service and cost effectiveness. Financial institutions are known for their vast investments in IT and the continuous utilisation of their IT infrastructure for competitive advantage and product differentiation. The deployment of new technologies, the impact thereof and changing IT trends, is often more rapid in this industry than in most others, necessitating an acute awareness of exactly what the most critical issues are.

The identification and overall priority of these issues and their importance to IT management, both in the financial and wider IT industry, provided the motivation and justification for this research.

More specific, detailed information regarding the FNB business background and current IT scenarios, is provided in Appendix A.

Although FNB is well positioned and at the forefront of IT deployment, there are numerous pressures from both the business community and within IT itself, to seek better and more effective ways of operation (First National Bank Information Technology Group Business Plan 1996/98).

Pressures identified from a business perspective include:

- service levels and availability of systems
- the delivery of cost effective IT solutions
- the alignment of business and IT strategies
- the ability to react faster to business developments
- the formalisation of guidelines for IT project prioritisation.

Pressures from a technical perspective include:

- ill-defined and overlapping roles and responsibilities
- an immature client server architecture
- the growing number of incompatible systems
- the ability to attract and retain suitable technical skills
- inconsistent and non-complimentary standards and procedures.

Numerous goals and objectives have been identified within the group and critical success factors include the following:

- effective management of unpredictable change
- graceful coexistence of integrated systems
- clear articulation of policies and strategic direction
- full justification and clarification of business cases for funding IT projects
- closer alignment between business and IT
- cost reduction and containment
- improved systems availability and reliability
- speedier delivery of IT solutions.

Customer information databases will be more effectively utilised to implement event-driven marketing, cross-sell opportunities, application and behavioral scoring processes. Where possible, the process of granting credit will be automated resulting in reduced bad-debt provisions and improved marketing of services to customers. Customer service is to be improved by redesigning and re-engineering business processes throughout the organisation, to achieve cost effectiveness, efficiency, customer friendly procedures and excellent customer service.

There is widespread acceptance within certain institutions that business re-engineering can be successful and that the concepts be taken very seriously (Hall, Rosenthal & Wade 1993).
Over a period of time, the employee headcount numbers will be reduced and a strategy of paying more to less staff will be introduced. For the first time in seven years, there has been a drop in the total number of employees in the banking sector (The Star Business Report 1997).
This could signal a trend of declining employment, due to the increased competition levels from international banks which is forcing general efforts to reduce costs.
Various group-wide initiatives are in place to uplift the previously disadvantaged communities, with objectives to align the racial mix of the employees with the racial demography of South Africa. The objective is, to become the first-choice employer, in a position to retain and attract the best employees. An internal project has also been initiated whereby the strategic fit of all non-core business and support units is being evaluated.
Already this project has resulted in the outsourcing of certain resource intense operational functions and the disposal of non-core business units.

Many far-reaching paradigm shifts have already and will continue to take place in the future, to position banks favourably in the market-place. At present there is much enthusiasm and confidence within the FNB group, that these efforts to transform the bank, will be of immense benefit to all of its stakeholders.

Customer loyalty in banking is a direct function of customer satisfaction and product penetration. The four major financial institutions are therefore in direct competition, for an increasingly less profitable market-share. A large number of international banks and financial institutions have entered the local market since the reintegration of our economy with world markets. This international competition is increasing, with many international institutions regarding South Africa as a potentially profitable new market.
At the end of the second quarter of 1997 there were sixty-five international banks trading in South Africa, either through fully-fledged branch outlets or representative offices (Business Day Business Report 1997).

It is widely accepted that local and possibly international retailers, will also enter the financial services market. These new entrants will significantly increase competition and force the traditional banks to improve on cost effectiveness, service and competitiveness. Deregulation and changing market trends within the industry have also led to increased competitiveness among suppliers of financial services products. This, together with advances in communications and IT, has allowed non-banking organisations to enter the financial services market without requiring branch office networks and infrastructure (Keltner and Finegold 1996).
These market forces have necessitated drastic reevaluation and alignment of organisational structures and business processes, resulting in numerous initiatives within banks to address these threats.

Business objectives are changing from the traditional product-driven focus to a more customer focused organisation. Distribution strategies are also being examined in order to improve the delivery of products to customers, in a more customer friendly and cost-effective manner. Improved IT automation will be implemented and deployed where possible with the role of branches changing from being administration oriented business outlets to more sales and service oriented outlets. In many instances the opinions of Hammer and Champy (1993), that internal business needs were pushing the customer out of the door, were evident in the financial services industry. It is expected that in time the number of physical branches will be reduced as customers are migrated to more cost effective electronic delivery mechanisms.

4.1 Aligning the IT Organisation within the Organisation - Ranked 1

Rating	1	2	3	4	5	6	7	8	9	10
No. of Responses	8	8	5	2	1	0	1	0	0	0

The comparative data provided clearly indicates that on average, this issue is considered to be of high priority by the majority of the respondent group.

Response Analysis:

- total number of responses in top ten - twenty-five
- total number of responses in top seven - twenty-five
- total number of responses in top two - sixteen
- total number of responses not rated - six.
- percentage of responses in top ten - 81.

More respondents (52%), rated this issue as being in the top two, as well as in the top seven (81%), than any other. This issue also received only six responses (19%), outside of the top ten, which in total is the second least obtained from the respondents.

Comments received:

Below are extracts and examples of comments received from respondents and participants:

> *"I'm not too sure which comes first, but alignment is something we are trying to address. Through the implementation of governance the business now begins to take some ownership of IT."* - Head of Department

> *"This is one of the items that the business has been telling us for a long time, that we are not aligned with them. We all know the reasons for this, the IT strategies and the business refusal to involve IT intimately in the business planning process.*

The following table contains the overall consolidated research findings which presents the issues ranked by average rating of importance. The lower averages indicate the priority issues, as the ratings were requested from one to ten in ascending order, with one being the most critical, followed by two etc.

More detailed information is provided in Appendix D.

Table 1. Critical Issue Ranking

RANK	CRITICAL ISSUE	AV.
1	Aligning the IT Organisation within the Organisation	4.03
2	Improving IT Strategic Planning	5.58
3	Implementing and Managing Collaborative Support Systems	6.00
4	Using IT for Competitive Advantage	6.39
5	Facilitating and Managing Business Process Redesign	6.74
6	Recruiting and Developing IT Human Resources	6.84
7	Building a Responsive IT Architecture and Infrastructure	7.06
8	Increasing Understanding of IT Role and Contribution	8.00
9	Managing the Existing Portfolio of Legacy Applications	8.35
10	Improving the Effectiveness of Software Development	8.48
11	Making Effective Use of the Data Resource	8.71
12	Measuring IT Effectiveness and Productivity	9.10
13	Planning and Integrating Multi-Vendor Open Systems	9.29
14	Outsourcing Selected IT Services	9.32
15	Facilitating Organisational Learning	9.39
16	Planning and Managing Communication Networks	9.55
17	Developing and Managing Distributed Systems	9.87
18	Developing and Managing Electronic Data Interchange	10.61
19	Facilitating and Managing End-User Computing	10.68

The guiding principles of the transformation project are:

- culture of commitment to service, with all efforts placing customer service above all else
- acquire a deeper understanding of the environment and industry
- have a more business-oriented outlook and allow processes to be driven by customer needs
- strive to become a learning organisation through innovation, creativity, flexibility and learning from each other through teamwork across functional processes
- recognition geared toward teams, competencies, delivery and achievement
- separate the strategic, from the support functions and evolve these with the changing environment
- continuous improvement and focus on adding value
- decision making empowerment, by giving responsibility and authority to the lowest level of competence.

It must be emphasised that the aim of this research was to identify the higher priority critical issues and not to concentrate too heavily on the actual ranked average rating of the particular issue.

It is for this reason that only the seven most important issues were selected for further discussion, as there was clear average ranking differentiation from the lesser important issues. Furthermore the researcher suggests, that due to the impact on organisational resources and priorities, between five and seven critical issues should ideally be selected and focused upon.

The issues are all considered complex and a smaller, rather than greater number should be addressed in detail, to allow for the achievement of manageable success.

The seven most critical issues identified as being of higher priority by the thirty-one actual participants from the original respondent group of fifty-three, is listed below together with specific information and analysis as obtained from the research information and literature.

4. Results and Findings

The results and findings must be considered in conjunction with an appreciation and understanding of the current prevailing scenario at FNB. The entire group is at the threshold of enormous change with regard to its overall structure and general business direction. A formalised business transformation project has been initiated by the Chief Executive and the process is targeted for implementation throughout the bank.

The project has been in existence for some time and already major impact has been felt within the organisation. Certain non-core business areas have been disposed of and others have undergone major restructuring and realignment.

Together with the group, the IT division is also under scrutiny and in the midst of major change, in order to be correctly structured and positioned to allow for optimum support of the modernised organisation. The IT exposure to and active involvement with this transformation process undoubtedly influenced the final research findings and analysis data.

The primary focus of the IT transformation project is aligned with the following salient points:

- analyse the way in which IT interacts with its customer and build mechanisms and relationships, to ensure that this interaction is effective
- develop strategies and plans to implement processes that result in customer needs being met
- create an organisational environment, culture and communication, to facilitate focused effectiveness and efficiency of these processes
  optimal utilisation of organisational resources, with specific emphasis on human resource assets.

Specific sub-projects have been established to facilitate change in:

- communication and customer orientation
- leadership and management
- structure, strategies and planning.

What was anticipated and proved to be very evident, was the high level of accurate understanding of the questionnaire content. This is due to the fact that there is much interaction and common focus and awareness, within this specific management group. Many of the issues documented in the questionnaire would previously have been identified and discussed in varying levels of detail, as part of the formal process of setting goals and objectives in the planning cycle. Data received from the group, using a ten-point rating scale method, was captured into a spreadsheet model and computed to determine the most critical issues as rated by the respondents.
The final results could, however, have been influenced by respondents from a particular IT area rating issues as being extremely important in terms of their day-to-day operational responsibilities, such as telecommunications support.
Another positive factor to be considered, is the common understanding and conceptual appreciation by the respondent group of the issues receiving focus within the FNB group.

The overall research results were validated and accepted as issues of critical importance by all participants and represented institutions. The only significant deviation was the overall priority within the different organisations.

As suggested earlier, the researcher is of the opinion that this is mainly due to differing organisational strategies and the almost unique scenario at each organisation.

3.8 Limitation of Research

Although this research was a concentrated analysis of issues at one financial institution, the respondent group was a fully representative cross-section of experienced and multi-disciplined IT professionals.

This research, although highly valuable to FNB, should provide general information and insight into critical issues affecting most, if not all, IT departments. The information gathered should also provide the foundation for further research incorporating a larger sample of companies within South Africa.

Detailed below are the various departmental areas within the IT group who were represented:

- information systems development
- computer operations
- technology strategies
- finance and planning
- capacity management
- human resources
- information architecture
- disaster recovery
- service marketing
- customer services.

The group members' levels of IT experience and exposure is extensive. Most are career IT professionals, with many having had international experience by either having worked abroad or visiting vendors and other IT installations. In essence this group is responsible for the direction and successful management of a division which employs in excess of one-thousand-two-hundred IT staff and is acknowledged as innovative and leaders in their field. This group is well qualified to assess the IT issues of the day, in terms of organisational direction and technological developments and challenges.

There is also sound understanding of what is expected of the IT group, by a demanding user community faced with constant change and limited opportunities in an extremely competitive market-place.

3.7 Validity and Reliability of Data

It is accepted that there are some concerns associated with the validity and reliability of data gathered particularly in qualitative research. Every effort was made to ensure that the participants all had similar levels of understanding and comprehension of the issues listed in the questionnaire. In certain cases, queries regarding questionnaire content and interpretation required further explanation, which was provided either verbally, or via the electronic-mail facility.

The interviews were held in a semi-structured manner, whereby the preliminary results of the research were used to direct and focus the discussion. Further information was obtained in this manner and where relevant, used as additional input to the final analysis and research findings.

Furthermore, in the same manner and to reduce possible bias from the FNB based respondents, the researcher solicited views from fellow IT professional peers and industry colleagues employed within the financial sector at competitor financial institutions.

The overall research results were validated and accepted as issues considered extremely relevant and of critical importance at all of the represented institutions. The only significant deviation from the final research findings, was the actual priority considerations within the different organisations.

The researcher suggests that this is mainly due to differing organisational strategies and the almost unique scenario at each organisation, encompassing vendor alliances, outsourcing policies, third-party software providers, maturity and complexity of the existing systems portfolio and IT infrastructure investment capabilities.

3.6 Respondent Group

The respondent group identified for participation in the survey included professional IT management from across the entire division.

The distribution of this group is consistent with an IT management team in any large commercial or financial services organisation. Due to their roles and responsibilities being impacted on a day-to-day basis by important industry issues and trends, the target group consisted mainly of senior and departmental managers. A number of IT consultants and senior technical staff were also included in this group, to obtain more balanced and comprehensive sets of data. A total of fifty-three questionnaires were distributed and thirty-one, which equates to a 58 percent response, were completed and returned.

The aim of this research was to identify the most critical issues and not to concentrate on the actual ranked positioning of a particular issue. Therefor only the seven most important issues were selected for further discussion, as there was clear differentiation between these and the lesser important issues.

After the questionnaire information was returned, the data was analysed to establish the number of actual response occurrences and priority rating allocated by the respondents to the various issues. This process was automated and a spreadsheet model utilised to compute the average rated score of each identified critical issue. The issues were then ranked in ascending order of most important average rating.

The overall spreadsheet results tabled an average rated score received for each issue, together with the resultant ranking in ascending order of priority. For purposes of constructing this table, the researcher assumed that a rating was the actual rating allocated to a particular issue and that the ranking, was the actual tabled position of importance computed in ascending order of averaged importance rating.

In order for an accurate and realistic average rating to be derived, only those issues actually rated between one and ten were input into the spreadsheet, with all those not being rated allocated and even rating of eleven. The assumption being that the issues not rated within the top ten, be allocated the same value to indicate lesser importance when calculating the average. This would result in only the top ten issues being ranked in order of importance and not the full nineteen as specified in the original questionnaire.
This was not considered as being of concern to the researcher, as the objective was to identify the top ten issues.

As a second phase, the final ranked results of the qualitative analysis was further verified by means of interviews. These were held with a select representative group of prominent members of the original respondent group and consensus reached regarding support for the original empirical findings, research results, accuracy, lack of bias and general understanding.

Most of the issues identified by Brancheau, Janz and Wetherbe (1996), were retained, however, in certain instances the descriptive language was amended to conform to internal FNB standards and terminology. The researcher then designed a nineteen point questionnaire which would effectively evaluate and validate the empirical generalisations as stated previously. The questionnaire issues were randomly listed to avoid primacy or possible influence.

As a pilot phase before circulation and to increase general acceptance, the clarity, comprehensive content and structure of the questionnaire was discussed with a number of senior IT managers. This group included representatives from Systems Architecture, Strategies and Systems Development. Frequent operational, planning and strategy related workshops and meetings, which required participation by this group, resulted in varying levels of understanding and appreciation of these issues.

After the relevant amendments were made, the final questionnaire, (Appendix B), together with explanatory supporting information and instructions, was circulated.

Due to the general acceptance as a means of effective communication and availability, the very effective internal electronic-mail infrastructure was utilised to distribute the questionnaire to the respondent group. The respondents were requested to allocate a rating in ascending order to each of the listed issues that they felt should receive the most important ranked priority. The ratings applied to the critical issues listed in the questionnaire, was on an ascending scale from one to ten, where one indicated the most important issue, followed by two, three etc. The researcher quite intentionally requested that only the ten most important issues be rated and focused upon, so as to avoid vagueness and to allow for specific concentration in some detail on the higher priority issues.
In addition, the respondents were encouraged to provide further textual comment on the issues either included in the questionnaire, or any additional issues they felt required either mentioning, further emphasis or comment.

3.4 Empirical Generalisation

Substantiated and supported by an extensive literature review of pertinent material, the following empirical generalisations have been defined to support the theoretical conjecture:

- it is critical for an organisation to align its IT with the business
- it is critical that the most appropriate technology infrastructures are in place to support the business direction
- it is critical for the organisation to outsource those IT functions that are not considered strategic or mission critical
- it is critical to implement appropriate human resource management and remuneration policies, in order to attract and retain, the already very scarce IT staff
- it is critical to implement sound processes for project cost benefit, monitoring and prioritisation criteria, to maximise the return on IT investments
- it is critical to effectively manage the local skills shortage problem which is being exacerbated by emigration and the volatile competitor market.

3.5 Research Design

The research required an approach which would solicit valid information and viewpoints from a respondent group, to allow for the objective identification and priority assessment of critical issues facing the IT management. A qualitative method of gathering information from a key informant group, was selected for this purpose.

In order to gather this qualitative information once the area of research had been identified, the researcher compiled a comprehensive list of nineteen critical issues. A brief description of each issue is provided in Appendix C.

This list was based on the researcher's own experience within IT management in the financial sector, as well as previously published research frameworks undertaken by Ball and Harris (1982); Dickson, Leitheiser, Nechis and Wetherbe (1984); Brancheau and Wetherbe (1987); Niederman, Brancheau and Wetherbe (1991) and Brancheau, Janz and Wetherbe (1996).

3.2 Literature Review

Once the area of research had been identified, an extensive literature review, as outlined in Chapter 2, was undertaken. It was extremely important for the researcher to evaluate the available literature on the subject being researched. Current points of view and theories, together with previous research findings and surveys, were extensively reviewed. It became apparent that critical issues facing IT management are varied and can be considered somewhat unique to a particular organisation. The issues change constantly, require a determined management focus and contribute immensely to the overall complexity of determining effective organisational strategy and direction.

3.3 Theoretical Conjecture

From the information gathered during the literature review and the researcher's own experience of IT management at a financial institution, the following theoretical conjecture was defined:

The critical issues facing IT management at a particular organisation cannot simply be determined by accepting general IT industry findings and priorities.

As discussed previously, these issues are largely dependent on both the technological and business maturity of the organisation.

The researcher's opinion, which is supported in the IT industry related literature, is that most medium to large IT departments will find the following to be among most critical issues facing IT management at financial institutions in South Africa:

- *aligning the organisation's IT with the business*
- *identifying the most appropriate technology infrastructure for the organisation*
- *outsourcing certain IT services to appropriate service providers*
- *implementing appropriate human resource management and reward policies*
- *improving project cost benefit and prioritisation criteria*
- *managing the local skills shortage problem.*

3. Research Methodology

3.1 Research Problem and Objective

It is evident from the literature review information that there are different, ever changing and evolving critical issues facing IT management today. Many organisations are somewhat aware of these issues, but have no proactive strategies and plans in place to address the most critical areas.

The question which this research will attempt to answer is as follows:

What are the most important critical issues facing IT management at a Financial Institution in South Africa?

It is essential that the critical issues are identified and prioritised in terms of those considered as being of most importance and with the highest potential impact on the organisation.

Unless there is conscious awareness and active monitoring of these issues, together with practical measures in place to counter, or at least effectively manage these scenarios, many organisations face enormous problems.

The objective of the research is that pertinent information is collected and analysed in order that proactive steps are taken, to not only address the critical issues, but also those identified as being of most importance.

This research will provided the means of consolidating this information and presenting a representative and generally accepted analysis of specific data provided by a knowledgeable group of respondents. These results, once disseminated throughout the group, would allow for focused strategic plans and projects to be initiated to pro-actively manage and control the most important critical issues.

Comments received:

Below are extracts and examples of comments received from respondents and participants:

> *"Through concerted effort IT will be exploited by the business and hence enable the business to use IT for competitive advantage. Slowly IT will become a corporate and strategic resource."* - Head of Department
>
> *"This must be the general theme."* - Projects Manager
>
> *"We must start paying attention as to how the existing systems and data can be leveraged to FNB's advantage."* - Head of Department
>
> *"FNB understands the importance of this but for reasons unknown to me have not implemented it. This would be one of the critical areas whereby costs don't have to increase to improve business opportunity dramatically."* - Senior Manager
>
> *"We have achieved this with the likes of the Speedpoint etc., but have since rested on our laurels. We need to resurrect this".* - Senior Consultant
>
> *"IT as the enabler for the business can and must be used to achieve strategic and competitive advantage".* - Head of Department

Competitive advantage is normally defined as the ability to earn shareholder profits consistently above the average for the particular sector of industry.
This, in essence, means how the utilisation of the technology infrastructure and the exploitation of this investment contributes to bottom-line profits, the increase of a market-share or providing a cost benefit advantage over competitors.

Porter and Millar (1985), contend that IT influences strategy by altering or influencing the rules of the game and by providing new methods to outperform competitors, or providing the ability to spawn new business.

There are two critical underlying considerations which need to be managed and these are firstly, working on the right things and secondly, having the right people involved and working together. These people or teams, must understand the existing IT infrastructure and make sure that this portfolio of IT projects align with the business goals and objectives. The relationships between IT and the business must be pro-actively managed, to maintain these roles and responsibilities.

4.4 Using IT for Competitive Advantage - Ranked 4

Rating	1	2	3	4	5	6	7	8	9	10
No. of Responses	5	0	2	5	2	2	0	5	2	1

The comparative data provided clearly indicates that on average, this issue is considered to be of high priority by the respondent group.

Response Analysis:

- total number of responses in top ten - twenty-four
- total number of responses in top seven - sixteen
- total number of responses in top two - five
- total number of responses not rated - seven.
- percentage of responses in top ten - 77.

This issue received a fair average rating from the group with twenty-four (77%), of the respondents rating in the top ten of issues and five (16%), in the top two.

What is evident from inputs received, is that most systems initiatives and associated processes are scattered across the group. Given the current strong departmental orientation, Gaiber (1995), suggests that misalignment and polarisation is common within today's organisations and that technological islands exist that do not always support true business needs.
The business is becoming increasingly sensitive regarding IT investments and questioning the benefits. Establishing a partnership between the IT organisation and the business, appears to be a perennial quest at many companies. IT plays an important enabling role in the transition to more cooperative and collaborative relationship within organisations (Reich & Huff 1991, Clemons and Row 1992).

An important way of assuring the success of projects, is to implement and adopt a team-based approach, which provides for quicker decision making, shared accountability and success. In the collaborative, flatter environment, the emphasis must be on goal achievement, related to strategic direction and the avoidance of dysfunctional and territorial behaviour evident in the traditional hierarchical banking structures.
Self-contained, multi-disciplined teams, are being established to enable cross-functional decision-making in support of common goals and coordinated efforts.

It is important to accept that one cannot start with the application of IT, without firstly having a clear understanding of the business purpose to be served and the multiple users to be accommodated (Frey 1992). There must be synthesised team work and effort, to allow maximum advantage of efforts and energies.
Business and IT partnership is accepted as an important characteristic of world-class IT organisations. Organisations that can achieve real business and IT partnerships, reap the benefits of improved teamwork and value from their IT investments.
This partnership can be considered a collaboration between the business and IT, to jointly undertake projects that result in optimum value to the business. This partnership is a complex and multi-faceted issue, involving having the correctly skilled and capable people fulfilling clearly understood roles and responsibilities. It must become an accepted concept throughout the enterprise, with shared responsibility between business and IT.

Overall, twenty-seven (87%), of the respondents rated this issue as being in the top ten, which is the highest of all the issues. However, this issue only had seven (23%), respondents rating it in the top two, hence reducing the overall. In addition only four (13%) of the respondents did not rate this issue in the top ten.

Although not placed highest of the ten issues in terms of ranking, this demonstrates large support from the entire respondent group to fully justify concentrated focus and attention.

Comments received:

Below are extracts and examples of comments received from respondents and participants:

> *"Tools, systems and methodologies must add value and not be dictated from an ivory tower, with little or no understanding of the development of solutions that support business needs".* - Head of Department

> *"It is essential that we have collaborative teams which serve the business needs. They must have one set of objectives and goals that are clearly and emphatically directed towards the business unit winning its war against the competition. From an FNB point of view we do not currently have this situation and it is one of the prime reasons why, in my opinion the business is not satisfied with IT."* - Projects Manager

> *"This point is key to our future success."* - Head of Department

> *"Improved development processes and methodologies to be identified and implemented to fully support integrated team efforts".* - Projects Manager

> *"We need to work with other areas to provide a wide ranging, encompassing support strategy".* - Senior Manager

> *"There is a lot more we can and should be doing. We have survived so far, but we can do better".* - Head of Department

Lederer and Mendelow (1989), also suggest problems with the coordination of IT and business plans. At times, the organisation has no defined mission, objectives, and priorities and even when these are in place, they are too general or not communicated effectively.

Chan and Huff (1993), developed a measure for IT strategies along the dimensions of innovativeness, pro-activeness, aggressiveness, analysis, defensiveness, futurity and riskiness. Strategic alignment was then defined as, the degree to which resources were actually committed by both business and IT to each of these dimensions.

Coakley and Fiegener (1995), proposed a further measure of strategic alignment based on "strategic consensus". Strategic consensus is based on the mutual understanding by management of the strategic priorities of the organisation and the IT contribution. High levels of strategic consensus between business and IT management, results in agreement on strategic priorities and direction.

4.3 Implementing and Managing Collaborative Support Systems - Ranked 3

Rating	1	2	3	4	5	6	7	8	9	10
No. of Responses	3	4	3	5	0	1	1	3	5	2

The comparative data provided clearly indicates that on average, this issue is considered to be of high priority by the respondent group.

Response Analysis:

- total number of responses in top ten - twenty-seven
- total number of responses in top seven - seventeen
- total number of responses in top two - seven
- total number of responses not rated - four
- percentage of responses in top ten - 87.

IT planning is a continuous process and should be adaptable and accommodates stimuli from the business and technology worlds.

Earl (1986), has developed the following framework, which indicates a preferred mode of IT strategic planning:

Strategic context	Characteristic	IT strategic planning
IT is the means of delivering goods and services in the sector	Computer-based transaction systems underpin business operations	Infrastructure-led
Business strategies increasingly depend on IT for their implementation	Business and functional strategies require a major automation, information, communications capability and are made possible by these technologies	Business-driven
IT potentially provides new strategic opportunities	Specific applications or technologies are exploited for developing business and changing way of managing	Mixed

Figure 3. Strategic Planning Framework

A number of different terms have been used in the literature to describe the concept of IT strategic alignment: "strategic alignment" (Henderson and Venkatraman 1993; Luftman, Lewis and Oldach 1993), "linkage" (Reich and Benbasat 1994), and "harmony" (Woolfe 1993).

What is accepted in all of the above and adopted by FNB, is that the IT strategies and plans must support the organisational strategies and plans.

Woolfe (1993), questions the method of successfully monitoring that these strategies and plans are in fact in place and being adhered to. It is very difficult for IT to keep abreast of their impact, due to continuous competitive and economic pressures and rapid changes taking place throughout the business.

Where key IT issues could influence and/or support the way in which the organisation will develop, it should be highlighted and stated in the strategy plan.

Key issues for managing IT in the FNB context for the next five to ten years, can only be mastered if we are aware of what the issues are and if we determine how the issues could affect the organisation. If we can determine the "what and how", we can develop a strategy to address these issues and manage the processes which contribute to the establishment of a strategy namely, strategic planning, strategic thinking and opportunistic decision making.
Ward and Griffiths (1996), identified a general set of objectives for IT planning which can serve as a good guideline for IT executives who want to position their respective organisations:

- future and current information needs should be identified, recognising that these needs will change
- the IT function should be equipped to respond quickly and effectively
- policies for the management, maintenance, creation, control and accessibility of the corporate information resource, should be set
- the IT function should be positioned closer to the business, with representation at the highest possible level
- a sound information systems architecture should be facilitated
- effectively manage the skills portfolio
- determine an effective and achievable organisation structure for IT
- ensure that the IT function is business focused
- ensure that the business and IT share responsibility for utilising IT.

Depending on the way in which the organisation deploys IT, it will continue to play a role in the transformation process.
Successful IT planning is clearly dependent on senior management involvement and commitment.
It is important that the key issues relevant for FNB be identified and understood so as to incorporate the necessary objectives and goals into the overall IT plan.

"Technology must not determine what IT implements. Without a business plan IT will never deliver what the business requires. No priorities or business goals will be met".
- Projects Manager

"We are improving but in certain cases our prioritisation process is unsuccessful and projects have differing objectives placing pressure on sharing of resources".
- Senior Manager

"Currently we perform IT planning before the business has completed theirs. This has a negative impact on IT's ability to support the business and surely has to change".
- Senior Manager

"IT is the enabler of business strategy and given the likelihood of global companies entering South Africa, it is imperative that both the business and IT, in partnership, set the strategic direction of the organisation". - Head of Department

The rapidly changing business and technological environments, necessitate a synchronisation of long-term IT and FNB business plans. Effective Strategic Information Systems Planning is a major management challenge and is essential for the effective provision of support and delivery of systems, to the organisation.
Management within the organisation who is wanting to position the enterprise pro-actively, must develop a strategic IT plans. This will provide a robust framework for the long-term management of IT, allowing for organisational influences, such as size of the business unit, the sophistication level of its IT function, the maturity of the organisation and any immediate problems, which management need to address.

It is the responsibility of strategic IT planners within the respective organisations, to ensure that key issues are identified and addressed.
A strategic information systems plan should include objectives which are directly linked to the objectives and strategies of the business units, contributing to the entire strategy process.

4.2 Improving IT Strategic Planning - Ranked 2

Rating	1	2	3	4	5	6	7	8	9	10
No. of Responses	5	5	2	4	2	1	2	0	1	2

The comparative data provided clearly indicates that on average, this issue is considered to be of high priority by the respondent group.

Response Analysis:

- total number of responses in top ten - twenty-four
- total number of responses in top seven - twenty-one
- total number of responses in top two - ten
- total number of responses not rated - seven
- percentage of responses in top ten - 77.

Ten respondents (32%), rated this issue as being in the top two, as well as twenty-one (68%), in the top seven which ranks it second overall in terms of average. This issue received seven (23%), responses outside of the top ten.

Comments received:

Below are extracts and examples of comments received from respondents and participants:

"The recent merging of business and IT strategic planning should address this".
- Senior Consultant

"The planning must not only be aligned, but integrated and coordinated with that of the users". - Senior Manager

Tapscott and Caston (1993), suggest that the following clear trends have emerged when aligning IT within the organisation:

- IT is outsourced to an outside supplier or contractor
- the IT resource is accommodated in either a centralised or decentralised manner
- IT can also be established as a profit centre or separate company.

The alignment of IT within the FNB group, should flow from the role that IT plays within the organisation and be dependant on whether IT is utilised in a strategic, or operational support manner.

Perhaps the most important challenge for FNB executives during this organisational transformation, is to direct the different parts of the company to shift in concert with one another.

When this does not happen, there is greater risk that the IT resources will be allocated to the wrong strategic priority projects. Unless these misalignments in strategic priorities are uncovered and remedied, the entire IT alignment effort will be jeopardised.

What is not as clear, is how to achieve this alignment between business and IT and what impact misalignment has on the business.

By concentrating on enabling and enhancing strategies to alignment, organisations can initiate projects to achieve greater synergies.
Executive support for IT and the need to be a participant in developing business strategy, are key to successful alignment.
Inhibitors identified are, that business and IT often have poor communication, poor interaction and seem to be working at cross-purposes with differing priorities.

It has been widely reported that business and IT management are concerned with aligning IT with the business, to more closely support corporate strategies (Chan and Huff 1993; Halloran 1993; Henderson and Venkatraman 1993; Woolfe 1993). IT that is effectively aligned within the organisation cannot follow a specific model structure, as there are several principals to consider when aligning IT:

- active user participation is essential for all IT projects
- IT human resource management must be innovative, with modernised state of the art policies
- the structure must be flexible, enabling rapid development of systems
- IT must facilitate and be supportive of an enterprise-wide architecture and infrastructure
- organisational goals and reward systems must be linked to overall business performance
- the business and IT should be encouraged to work as one team
- a cost-effective, efficient customer oriented service, must be provided to the business.

It is in my opinion one of the most important hindrances to business achievement that FNB faces today. It is absolutely critical that at this point in time moves are made to integrate IT into business as an equal partner." - Projects Manager

"This hopefully will save the organisation." - Senior Manager

"IT is not close enough to the customer and never fully understands the business requirements". - Projects Manager

"We continue to tinker around at the edges and take too long to make alignment related decisions". - Senior Consultant

"The effectiveness with which IT can support FNB is dependant on our understanding of the business and how they rate our capabilities of delivering. We in IT are enablers and as such must be fully aligned with the business if we as an organisation want to be successful. Business today is more reliant on IT for both strategic and competitive advantage and thus requires close alignment". - Head of Department

The fundamental issue, of how the IT organisation should be aligned with the corporate structure and strategy of the corporation that has multiple strategic business units (Diamond 1994), was identified as the most important critical issue at FNB. The alignment process cannot be considered to be a single event, but rather a process of continuous change and adaptation.

Problems associated with organisational alignment, is often recognised by ongoing departmental and internal conflict, performance and cost complaints with regard to IT, competitive decline, high turnover of IT professionals and redundancies in systems development (Tapscott and Caston 1993).

Successful strategic alignment will enable FNB to maximise its IT investments by achieving harmony with the business strategies and plans. The impact of the importance of alignment, is accepted by its high ranking in the business press (King 1995).

This infrastructure must be reliable, affordable, dynamic, flexible having the ability to provide a wide range of products and services. Business functionality should be developed using a warehouse of components from which to assemble layers.
This concept becomes a catalyst for business functionality being built, by integrating existing common modules or functionality and services. This contributes directly to speeding up the systems development effort.

IT departments have to harness the power of new and emerging technologies, to provide an infrastructure, flexible enough to capitalise on business opportunities.
At the same time, past IT investments must be protected. Users need transparent access to data and applications, either within or outside of the enterprise boundaries. System administrators require tools and automation to simplify the complexities of managing the IT environment.
The complex business requirements, together with the challenges of the dynamic business environment, necessitate that an IT architecture is crucial.

In the current business environment most organisations have little idea of what their application needs will be in the future. This results in a requirement for an IT architecture that can allow for the exploitation of future opportunities and meet unpredictable requirements.

The primary value in establishing a comprehensive architecture and infrastructure, is that it removes possible conflict between the demands of business and those of IT
(CSC Index Foundation 1993). By establishing standards involving portability, security, inter-operability and reliable availability, IT can provide the following flexibility as demanded by business:

- faster delivery of new applications by utilising existing functionality
- provide integrated information from both internal and external sources
- integrity, standardised interfaces and separation of applications, from infrastructure complexities.

Comments received:

Below are extracts and examples of comments received from respondents and participants:

> *"Based on a business document regarding the delivery platforms. IT is to respond on how we will resolve our client/server or distributed platform problems. tions are necessary because of our slowness to develop solutions and our restrictive architectures."* - Technical Consultant

> *"The whole reason for IT's existence is to create and support the business in its attempt to win the war against competitors. Therefore the underlying technology infrastructure must be designed to facilitate and not hinder responsiveness. For a long time now, the business has been telling us that we are not responsive enough which causes them to lose business advantage".* - Assistant General Manager

> *"Without a comprehensive IT infrastructure, no standards, re-usable code or sharing of business systems will be achieved resulting in increased costs and skills requirements as well as increased time to deliver".* - Projects Manager

> *"We need an attitude of continuous improvemen - a feedback loop that actually results in improvement".* - Senior Manager

> *"We have too many different technologies limiting our effectiveness".*
> - Projects Manager

> *"We should be delivering what users want and where they need it and not restricting them to some IT formulated infrastructure that imposes our will on them".*
> - Head of Department

Building a responsive IT architecture and infrastructure to support existing applications, while remaining responsive to change, are key to FNB's long-term business productivity and viability.

Local companies will be forced to embark on aggressive programs of re-skilling, cross-skilling and mentoring, to uplift skill levels to meet the demand.

The next few years will be dominated by the year two-thousand issue, in particular in organisations where information technology is used in a strategic way. Project management skills will be tested to the limit and human resource issues such as remuneration and demand/supply management, will become even more prominent.

4.7 Building a Responsive IT Architecture and Infrastructure - Ranked 7

Rating	1	2	3	4	5	6	7	8	9	10
No. of Responses	2	4	0	1	3	4	3	2	1	1

The comparative data provided clearly indicates that on average, this issue is considered to be of high priority by the respondent group.

Response Analysis:

- total number of responses in top ten - twenty-one
- total number of responses in top seven - seventeen
- total number of responses in top two - six
- total number of responses not rated - ten
- percentage of responses in top ten - 68.

This issue was rated in the top two by six respondents (19%), which in comparison with the previously mentioned issues in reasonably high. Overall, twenty-one (68%) of the respondents rated this in the top ten, which is indicative of the importance of this issue and justifies inclusion as a critical issue.

There is currently far too few suitably experienced black people to fill the large number of diverse vacancies, resulting in premiums being paid to attract or retain this staff. Black employees are particularly vulnerable to direct approaches, with the promise of exceptionally high salaries, to move to new employers. As soon as one company has successfully recruited and developed a black IT professional, another entices the scarce resource to join them instead. It is accepted that certain groups have been disadvantaged and that for them to gain access to organisations in greater numbers, entails the granting of preferential treatment (Charoux 1990).

Dowling (1992), further suggests that blacks have been disadvantaged, but also women of all races. Many companies are almost being forced into this scenario, in efforts to have a workforce representative of the local population.

Many whites view this issue as a matter of reverse discrimination and are leaving the country, to avoid what they consider to be limited career prospects. Issues associated with diversity management are extremely sensitive and complex and have been implemented throughout the world with limited success.

Thomas and Ely (1996), suggest the following preconditions, in moving from a race/gender issue to one of group differences, in support of organisational learning and development:

- leaders must understand that a diverse workforce will adopt different approaches to work
- leaders must be committed to the process of learning and relearning and accept different perspectives
- all staff members can and should contribute fully
- allow for personal growth and development
- encourage openness
- staff must feel valued and allowed to take the initiative.

The exponential rates of change within the IT industry results in rapid skills depreciation and redundancy. This often leads to desperate measures by certain businesses to attract suitably skilled staff, especially in South Africa, where severe staff shortage is a reality.

Results from a study conducted by Zawacki lists the following ten human resource issues in order of priority:

- acquire a stronger business orientation by moving from a technology emphasis to a business and customer focus
- managers must primarily become competent business managers and secondarily technical managers
- define proactive requirements for attracting suitable skills for future technologies
- IT to facilitate the transfer of certain tasks and activities to the user community
- develop creativity and innovation
- retrain staff, encourage re-skilling and learning of new techniques
- implement new ways of motivating staff and inspire high performance teams
- provide training in behavioral skills, such as communication and teamwork
- develop improved performance methods with effective assessment procedures for both individual and team-based activities
- provide for suitable dual career paths for technical specialists.

Clinging to old cultures, styles, processes and reward mechanisms, will certainly not allow for competitive advantage. What is required by the modern organisation is leadership, vision, bravery and commitment, to break out into new horizons. Enlightened managers are accepting that it is the integration of finance, operations and people forming part of an overall business strategy, that allows one organisation to outperform another (Anderson 1997).
IT will continue to be a world player in the challenge to attract, develop and retain staff. The national, as well as the global imbalance in the supply and demand for talented IT professionals, will put added strain on the entire industry.

With regard to the management of the diversity of the South African workforce, the competition for suitably skilled employees remains a challenge. The effort by many organisations to employ previously disadvantaged black IT staff, has resulted in increased levels of competition for the small numbers of available candidates.

By taking a proactive approach, successful banks will need to implement new human resource management policies, skills development and rewards. Modernisations in this area at FNB, include team-based project incentive compensation, continuous assessment and development of all levels of staff, formalised technical and managerial career paths within IT and closer working alliances with learning institutions, to recruit the best available talent. Human resource issues cannot be neglected in the modern day organisation, especially when dramatic change and transformation are taking place.

These are often the most difficult to deal with and require effective management in the following areas:

- leadership that builds awareness, commitment to change, reducing resistance
- the acquisition of knowledge and learning of new skills and techniques
- teamwork, requiring the skills to participate and manage new processes
- team based recognition and reward mechanisms, for accomplishing strategic goals
- training of staff to achieve re-skilling, retraining, revised selection and recruitment policies (CSC Index Foundation 1994).

retention and recruitment of suitably skilled and mo ated staff, is essential to allow the organisation to increase competitiveness, operate effectively and execute strategies successfully (Alvares 1997).

The core competencies (Hamel and Prahalad 1994) and capabilities (Stalk, Evans and Schulman 1992), of employees who develop new products, provide high levels of customer service and implement organisational strategy in the changing market conditions, are vital sources for competitive advantage and economic prosperity.
The strategic advantage obtained from IT is usually short-lived, as competitors with access to similar technologies either follows the market trend, or in turn themselves develop innovative technological solutions. Zawacki (1993), suggests that really competitive advantage is obtained from managing the IT human resources better, which in the past has often been overlooked or not considered a priority.

Comments received:

Below are extracts and examples of comments received from respondents and participants:

> *"The more complex the environment, the higher the skills level you require. The recruitment and development of IT resources is crucial and perhaps the only way this can realistically be achieved is by creating a learning organisation."*
> - Head of Department

> *"FNB still has a base of good resources though these are fast dwindling. Therefore, whilst it is not yet highest priority, it needs to be addressed rapidly."* - Senior Manager

> *"In South Africa and FNB this cannot be any lower than number one in the priority list. The situation is aggravated with regards to the brain drain and poor education for the majority of school leaving children."* - Senior Manager

> *"Place more emphasis on recruiting staff with real potential".* - Senior Consultant

> *"The IT industry is developing very quickly and the development of skills must support the architecture. More time must be spent on developing staff".* - Projects Manager

> *"Loss of skills to the overseas and local market is a concern".* - Senior Manager

> *"Obviously nothing can be achieved without good human resource".*
> - Head of Department

Most organisations will focus on technology renewal, but what is of immense importance at FNB, is to balance investments in IT, with investments in reshaping and developing people. The strategic management of human resources is considered vital to success and will play a pivotal role in organisational performance, as the banks transform themselves to customer based financial service providers (Switzer 1996).

The challenge for IT in this process, is to provide the project management experience and discipline, together with technical vision and expertise, all of which are critical to the success of the re-engineering effort (Martinez 1995).

Re-engineering is not primarily a technological matter, IT staff must act as "enablers", not simply project managers and have full support of senior management (Huff 1992).

A revised proliferation of traditional roles and structures designed to integrate laterally across the organisation, is being implemented.

IT must respond to the trend of re-engineering the business, by renouncing the development of systems that retain current ways of working, for systems that support the organisations core processes and business vision.

4.6 Recruiting and Developing IT Human Resources - Ranked 6

Rating	1	2	3	4	5	6	7	8	9	10
No. of Responses	2	2	6	2	2	1	0	1	4	1

The comparative data provided clearly indicates that on average, this issue is considered to be of high priority by the respondent group.

Response Analysis:

- total number of responses in top ten - twenty-one
- total number of responses in top seven - fifteen
- total number of responses in top two - four
- total number of responses not rated - ten.
- percentage of responses in top ten - 68.

This issue is the first in the list of the top ten average rankings, to receive below 70 percent in terms of responses rated in the top ten. There was however sufficient overall response in the top ten (68%), to justify inclusion in the priority list.

Comments received:

Below are extracts and examples of comments received from respondents and participants:

> *"BPR must make meaningful change and not just tinkering at the edges."*
> - Support Manager

> *"We have not fared very well on this front and hopefully after our IT's own transformation we will be better placed to achieve this and thereby increase the profitability of the bank by reducing risks, which have caused us to lose profits".*
> - Technical Consultant

> *"Many such projects are under way and they simply have to work".*
> - Assistant General Manager

> *"BPR should be a normal part of every development project that is initiated".*
> - Head of Department

There are many issues facing IT management in the organisational context, with increasing business pressure to deliver effective solutions quickly. The business processes will be transformed and the organisation will change rapidly to improve general business performance.

Lathin (1995), identifies re-engineering as a response to industrial and technological developments and as in FNB, driven by major changes in competitiveness and consumer demand.

Klein (1994), contends that four out of five business process re-engineering projects fail as a result of unclear definitions, unrealistic expectations, inadequate resources, taking too long, lack of sponsorship, incorrect scope and lack of an effective methodology.

Re-engineering projects have a high failure rate (Bashein, Markus and Riley 1994), which is largely attributed to the resistance to change from within the organisation (Reger, Mullane, Gustafson and DeMarie 1994).

It is imperative that IT supports and provides the organisation with internal support in its effort to provide superior service to customers. Schneider and Bowen (1985), contend that the service internal to the company, is a factor required for effective service levels provided to external customers.

IT management should ensure that there is a positive contribution to the competitive advantage possibilities of the organisation and enable these opportunities. This awareness will allow for the strategic plans to incorporate realistic objectives, to fully support the business with respect to the competitive advantage opportunities.

4.5 Facilitating and Managing Business Process Redesign - Ranked 5

Rating	1	2	3	4	5	6	7	8	9	10
No. of Responses	5	2	2	3	1	1	1	0	4	4

The comparative data provided clearly indicates that on average, this issue is considered to be of high priority by the respondent group.

Response Analysis:

- total number of responses in top ten - twenty-three
- total number of responses in top seven - fifteen
- total number of responses in top two - seven
- total number of responses not rated - ten
- percentage of responses in top ten - 74.

This issue received a fair average rating from the group with twenty-three (74%), of the respondents rating in the top ten of issues. This issue also received ten (32%), responses outside of the top ten.

Functionally-based organisational hierarchies are being replaced, or will give way to cross-functional specialist teams supporting the information needs across functional lines. Users, are expecting IT to eliminate the limitations of location and distance, to increase their levels of efficiency.

Due to the exorbitant costs of the IT infrastructure, the cost of entering a particular market or offering a niche product, can often become a barrier to entry. A competitor who enters a particular market will usually be faced with an enormous capital outlay.

As IT has evolved and even though new technology and paradigms dominate, older technologies and paradigms do not simply disappear, which adds to the complexity of the IT environment.

What is reality today, is that it takes a lot less time for a system to become a legacy.

There are also some benefits to be derived from a multi-vendor environment, such as the business not being locked into one vendor's product range and can direct its own rates of technology implementation. Competition between vendors also tends to lower prices of products and services, which are often delivered faster.

Coates (1995), contends that new technologies, increased competition and a more assertive customer, are resulting in organisations customising their products and services.

This differential, is at times, the or[illegible]ingle aspect that allows for differentiation between FNB and the competitors.

In current models the organisational power is at the centre of the organisation, but the intelligent implementation of IT allows for this to be migrated from the periphery, to the place where customers are ultimately serviced (Davis 1996). The more efficiently, cost effectively and reliably this is achieved, will set one organisation apart from its competitors.

This contact, with the systems at the point of service, is known as the "moment of truth" and is the image of your company and service levels that remains as an experience for the customer (Albrecht 1996).

For an organisation, serving customers, is an opportunity to demonstrate its credibility and capability (Gronroos 1990).

Sustained competitive advantage is achieved by knowledge availability, learning and the continued ability of the organisation to exploit and leverage technology.

An important concept that highlights the role of FNB IT in competitive strategies, is the value-chain. The value-chain of the organisation is a system of interdependent activities which are connected by linkages.
These linkages exist when one business activity or process effects the cost or effectiveness of other activities. To gain competitive advantage, these activities must be performed at lower cost, offering more value, or in a manner that leads to differentiation.
IT permeates the value-chain at every stage and can enhance and transform the way these value activities are performed.

Specific process metrics such as value, quality of product, service, response times and overall costs, must be managed and translated into specific value delivery specifications. Most executives will adopt and pursue a value-seeking management process, to focus the organisation on maximising IT investments for competitive position.

In today's dynamic environment, business opportunities do not last very long. Added to this environment, is the worldwide impact and challenge of technology and communications which increases the competitive pressures exponentially. Businesses that are not positioned to capitalise on these opportunities will not survive.
One way to be prepared, is to develop an enterprise IT architecture that reflects business goals and allows the fast redirection of integrated IT resources, to take advantage of the opportunities.

The judicious use of IT is key to competitiveness. A company's IT infrastructure must be flexible enough to enable quick response to business opportunities.
This infrastructure with its associated goals, must be totally aligned with, as well as fully support, the business and its goals. These structures must be flexible enough to accommodate new technologies, as well as supporting the current.

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Hardware and software performance levels change constantly, however these can not always be readily utilised due to the financial and organisational challenges associated with their deployment. An challenge of increasing relevance, facing not only the local, but also the international IT industry, is the shortage of skilled resources.
This trend will continue to place most organisations in an unsatisfactory and even vulnerable situation. The ability to respond to customer and user demands as well as the ability to react to competitor threat and market opportunities will be severely restricted.

The entire year two-thousand compliancy issue will also have a dra. 'ic impact on the entire industry from the smallest, to the largest and most sophisticated IT user and practitioner. It is interesting that the results of this research did not at this stage identify this as being considered a major issue. The researcher contends that in time, this matter will be at the fore-front of most IT efforts and absorb the bulk of the available IT and business. In many cases this scenario will be accompanied with astronomical financial demand.

In closing, the researcher suggests that there is additional opportunity for further detailed research in this complex, volatile and most interesting area. The objective would be to formalise a relevant, perhaps even a more generic and flexible framework and approach, for periodically and efficiently assessing the critical issues. This would be of value, not only to IT management, but also other interested parties impacted by the continued developments across the entire spectrum of the IT industry.

6. Research Conclusion

This research clearly illustrates, that critical issues facing IT management in the current modern day and age, differs vastly from not only institutions, but in certain instances, countries.

The analysis of the research shows, that the FNB critical issue findings and particular scenario, differs greatly from, for example, the SIM findings. The researcher contends that the following factors will, and do, have a fundamental impact on, the priority and criticality of issues, with definitive correlation with stated corporate strategy and organisational objectives:

- the IT strategy required to support the desired business direction and priorities
- the maturity levels, profitability and sophistication of infrastructure
- the influence and demands of the competitive global market-place
- the availability of resources, both human and financial
- the financial sector of industry, which is highly IT reliant and service driven
- geographic spread and physical location, in relation to major continents and trading partners
- first-world versus third-world economies, skills and productivity
- favourable trading conditions with strong financial power
- political and workforce stability
- investment protection and personal safety.

The researcher suggests that the overall situation at FNB is certainly very different from the SIM base representative organisations and although to a lesser extent, the other financial institutions in South Africa. The competitive market-place may be similar, however the facilitators influencing internal focus and business pressures, could be considered unique to each organisation. As was contended earlier by the researcher, organisations find themselves in varying levels of maturity and with differing strategic trading and financial objectives. There is effectively no one single implemented architectural standard across the industry, resulting in many variations of vendor positioning and timing of technological advancement being brought to market.

5.6 Sixth Empirical Generalisation

Managing the local skills shortage problem.

This issue is of extreme importance to FNB, as suitably skilled, quality resources with potential, are extremely scarce. Normal staff attrition levels are being exceeded as a result of emigration opportunities and increased local demand.

It can be concluded that this empirical generalisation was fully supported by the research.

It can therefore be concluded that this empirical generalisation was fully supported by the research.

5.3 Third Empirical Generalisation

Outsourcing certain IT services to appropriate outsourcing service providers.

Although certain non-core operational type systems are being outsourced by FNB, a policy statement has been issued whereby no strategic system will be outsourced.

This empirical generalisation was not fully supported by the research findings and ranked fourteenth in terms of overall average rating.

5.4 Fourth Empirical Generalisation

Implementing appropriate human resource management and reward policies.

The research findings indicate that this issue is closely coupled with empirical generalisation number six. The entire human resource management responsibility was identified as being of great importance, especially in the South African context with its associated challenges.

It can therefore be concluded that this empirical generalisation was fully supported by the research.

5.5 Fifth Empirical Generalisation

Improving project cost benefit and prioritisation criteria.

The research indicated a medium level of support for improving the effectiveness of software development. In reality, this empirical generalisation will be closely integrated with implementing and managing collaborative support systems, which was fully supported. In addition, there is already a comprehensive project prioritisation and funding process in place at FNB.

It can therefore be concluded that this empirical generalisation was supported by the research.

5. Support for the Empirical Generalisations

The aim of this study was to determine the most important critical issues facing IT management within a major financial institution in South Africa. After obtaining the relevant information as provided by a respondent group of IT professionals from within the bank's IT department, the seven higher priority issues were examined and analysed in some detail.

The question posed for the research was as follows:

> **What are the most important critical issues facing IT management at a Financial Institution in South Africa?**

In relating the research findings to the empirical generalisations, the following assertions may be made:

5.1 First Empirical Generalisation

Aligning the organisations IT with the business.

There is widespread acceptance and understanding of the strategic importance of IT and its impact on the modernised organisation. It is crucial to have aligned synergies between IT and the business, to maximise enterprise-wide goals and objectives.

The research results concluded that this empirical generalisation was fully supported by the research, as is evidenced by this critical issue being ranked most important in terms of average rating.

5.2 Second Empirical Generalisation

Identifying the most appropriate technology infrastructure for the organisation.

The research results indicated strong support for the building and maintaining of a responsive infrastructure for the organisation. Without having a highly flexible, cost effective infrastructure in place, the organisation is not in a position to remain competitive in the current business economy.

Note: Further to the above information, a further interesting observation is that the two issues which ranked eighth and ninth and were not selected for further analysis, received 64 and 54 percent respectively, of responses in the top ten. This is further evidence regarding the complexity of identifying the priority critical issues. There is a myriad of factors influencing the industry and more specifically individuals, departments and ultimately organisations.

The IT world is becoming increasingly integrated and without a suitable architectural road-map, it will be exceedingly difficult to determine the impact of change.
A well-defined architecture and infrastructure provide the platform for business and IT alignment, as changes in the business environment can be extrapolated to that in the technical environment.

Tapscott and Caston (1993), proposed the following five step cyclical processes for establishing a standards-based architecture:

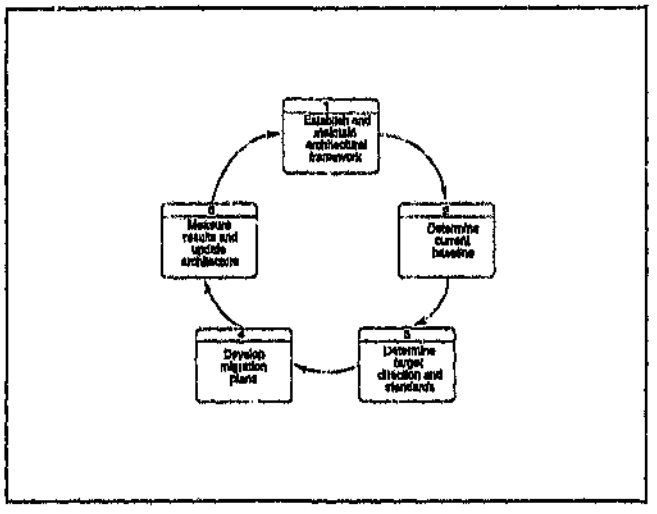


Figure 4. Architecture Planning Process

The architectural and infrastructural vision and planning for the organisation, must be jointly owned by the business and IT. This process must be business driven and provide the opportunity to focus on a business view, a work view, an information view, a technology view and an application view.

There are initiatives to formalise IT governance principles at FNB which outline how architectures and policies are established, deployed, managed and enforced within the organisation. A coherent process must be in place, to manage and control, the integrated business, systems and technical environments.

The capability of technology has developed faster than the ability of businesses to effectively utilise IT. However, IT is often unable to change at the pace required by the business. There is a distinct difference between the desired rate of change in business and the ability of IT to meet these needs.

An appropriate and well-designed infrastructure, will allow for rapid response to business, by separating system components that change frequently, from those that are more stable.

The FNB architecture reveals the banks perspective of its products and strategies.

As the pace of IT introduction has shown no sign of slowing down, with advances in software and hardware occurring rapidly, the new capabilities and functions must be accommodated within the parameters of existing systems and networks. The smaller the impact on the existing IT structure, the easier these new technologies can be incorporated.

These systems, that are responsive and flexible to change, provide very high value to their users and to the businesses they support.

The new technology infrastructure will form the foundation for a new virtual corporation, where companies and individuals will be electronically connected (Davidow and Malone 1992).

As new technologies proliferate in the market, careful consideration of how to leverage them inside an existing IT environment, assumes greater importance.

This infrastructure must provide the ability and responsiveness to allow IT changes to be implemented quicker than what the business changes. The architecture planning process provides a transition framework and critical linkage to the vision of the organisation and supports the realignment of IT resources. Architecture supports the physical infrastructure and includes models of the organisations business processes, hardware and software components. Tapscott and Caston (1993), contend that, as is the case with travel, knowing the ultimate destination is a mere beginning and knowing the route is essential.

10. Appendix C

10.1 Critical Issue Description

The following is a description of the critical issues originally identified, together with rankings from an international study, published in 1996 by the SIM society included for comparative purposes.

Aligning the IT Organisation within the Organisation - (SIM 9)

The effectiveness of IT, in supporting the needs of the organisation, is influenced by its structural location and reporting lines. Appropriate structure and location of IT within the organisation, is crucial and too often is not addressed, due to the historical organisation reporting structure and cultural issues.

Improving IT Strategic Planning - (SIM 10)

The aligning of long-range IT plans with the strategic business plans of the organisation. Constant changes in the business environment and accelerated IT changes, necessitate the need for flexible plans, that are continuously being improved upon and revised.

Implementing and Managing Collaborative Support Systems - (SIM 11A)

Appropriate IT support for the re-engineered team-based organisation, to ensure sharing of information, faster decision making and improved team effectiveness.

Using IT for Competitive Advantage - (SIM 17)

Recognition of opportunities, followed by rapid implementation of IT, to ensure long-term viability and for using IT for competitive advantage. This advantage is achieved by recognising and exploiting opportunities, through creativity and innovation.

Facilitating and Managing Business Process Redesign - (SIM 2)

In order to remain competitive, many organisations are transforming the way in which the organisation conducts business. IT plays a significant role in this change process, by enabling the innovative redesign of the core business processes.

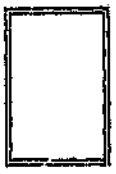
Please allow me some of your valuable time and respond to the request, as without your information the validity and accuracy of the FNB scenario will be superficial and inaccurate.

Please reply by listing the ten issues that you consider to be most important and list these in order starting from most important(1) to the least(10). You may want to utilise the above issues list and simply insert your the ratings, (1-10) in the boxes provided to reflect your own views. New issues, together with your importance ratings that you feel are relevant and specific to our situation at FNB, can be added after the list above.

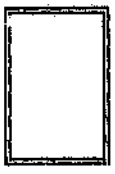
As much textual explanation and clarification of your issues, as well as input on points 2 and 3 above, as is possible will be most welcome. General feedback and the research results will be made available to the management team on completion of this exercise.

My most sincere appreciation and thanks for your contribution and participation.

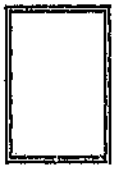
Andre Beukes.



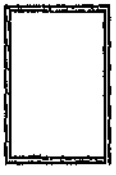
Facilitating and Managing Business Process Redesign.
(Transforming the way the organisation does business)



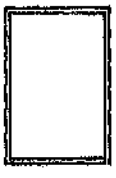
Developing and Managing Distributed Systems.
(Challenges such as maintaining software versions, data and distributed applications)



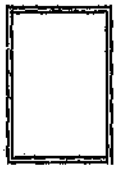
Improving IT Strategic Planning.
(Aligning of long-range IT plans with strategic business plans)



Facilitating Organisational Learning.
(IT ability to learn and use new technologies with business making appropriate use of IT across the organisation)

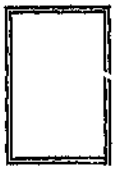


Managing the Existing Portfolio of Legacy Applications.
(Managing existing large investments and integrating new technologies)

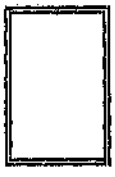


Using Information Systems for Competitive Advantage.
(Recognition of business opportunities followed by rapid systems implementation)

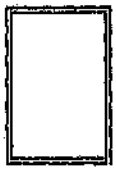
As mentioned above, this survey data was gathered overseas and I am convinced that we have different priority and perhaps unique issues to contend with at FNB and generally in South Africa. We are already acknowledged as leaders in the field of IT and the results of this formal local research could prove informative to our management team.



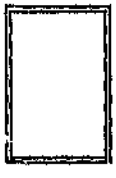
Increasing Understanding of IT Role and Contribution.
(Recognition as a strategic corporate resource and not simply an overhead)



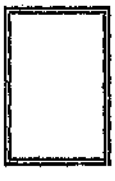
Making Effective Use of the Data Resource.
(Effective utilisation of the data resource as a corporate asset)



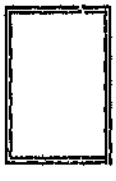
Facilitating and Managing End-User Computing.
(Promise of improved productivity and dangers of inadequate controls)



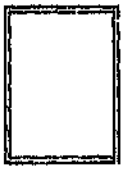
Recruiting and Developing IT Human Resources.
(IT Skills shortages and development of business skills and new technologies)



Aligning the IT Organisation within the Organisation.
(Appropriate structure and location of IT within the organisation)

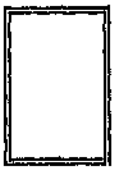


Improving the Effectiveness of Software Development.
(Increased effectiveness of software delivery to the organisation)

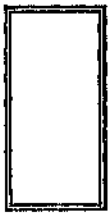


Measuring IT Effectiveness and Productivity.
(Impact on bottom-line, competitiveness and the reduction of operating expenses)

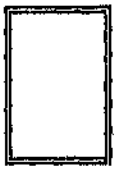
This information was obtained via questionnaires and subjected to a 3 round Delphi iteration in order to reach consensus.



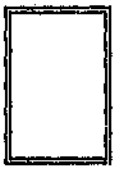
Implementing and Managing Collaborative Support Systems.
(Appropriate IT support for the team based organisation)



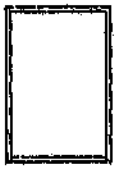
Building a Responsive IT architecture and infrastructure.
(Building a technology architecture and infrastructure that will support existing applications, business data relationships and also remain responsive to change)



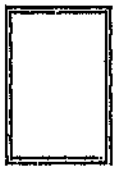
Planning and Integrating Multi-Vendor Open Systems.
(Move toward vendor-neutral environments based on industry standards)



Developing and Managing Electronic Data Interchange.
(The electronic communication with customers and suppliers via standardised transaction formats)



Outsourcing Selected Information Services.
(External companies being utilised to provide IT services more effectively)



Planning and Managing Communication Networks.
(Using IT for competitive advantage and access to internal and external communications)

9. Appendix B

9.1 Questionnaire

Dear colleague.

I am currently in the process of undertaking an internal research project and would greatly appreciate input from yourself to improve and complete the research analysis of the FNB scenario.

The title of the research paper is "Organisational Impact: Critical Issues Facing Information Technology Management at a Financial Institution in South Africa".

The objective is firstly to define what a respondent group of our management considers to be the 10 most critical issues are and then to determine what impact these issues facing IT management has on our organisation.

Consideration should be given to the following:

1- what you consider to be the most critical and significant issues currently facing IT management at FNB

2- what positive impact solutions have already been implemented, or are planned, to pro-actively address these issues

3- what could be done to avoid a negative impact on the organisation as a result of these issues.

These issues should be directly related to our support of the FNB Group and generally accepted as being an important issue impacting the IT division. It is important to recognise that very specific issues related to an individual system would only be important to a small group and will not allow for consensus amongst the entire management group.

The results listed below are the most important issues, in random order, as identified and agreed to in 1995. The respondent group consisted of 108 international institutional and board members of the Society for Information Management.

Emerging technologies and associated developments, will provide challenging opportunities to ensure that FNB maintains its competitive position and becomes *"a world class provider of Information Systems"* (First National Bank Information Technology Group 1996/98).

This COBOL based package has been used as a base architecture and a number of internal systems have been developed utilising this architecture. These systems are all highly integrated and embrace both on-line, real-time and batch processing.
The many additional and ancillary production applications have been written under COBOL, utilising the IMS data base management system, or in COBOL or NATURAL under the DB/2 database management system. The personal computer development is also primarily based on the IBM architecture, utilising both COBOL and 'C' programming languages, OS/2, Microsoft Windows and DB2 for the database management system.

The IT division employs in excess of one-thousand-two-hundred staff, providing support for all aspects of the systems development life cycle together with end-user and external customer support services.
The IT mission statement is as follows:

> **To provide our customers with Information Technology services renowned for their excellence.**

The goal of IT, is to extend the penetration and reach of all its systems, to service points enabling customers to conduct business at any time and from anywhere. This implies twenty-four hours per day, seven days per week and three-hundred and sixty-five days per year.

In order to achieve this, it is imperative that IT achieves the following critical success factors:

- provide appropriate and effective services where and when needed
- ensure optimum utilisation of resources in support of group priorities
- meet quality and reliability requirements
- engender strong partnerships with both users and customers
- deliver systems that at least match, or exceed, the best in the industry
- deliver systems on time and within budget
- maintain an educated, motivated and a skilled team of resources.

The Group's mission statement is:

> **Our aim is to be the leading financial services group, earning consistently good profits, through outstanding customer service, innovation and professionalism, achieved by a well-motivated and committed team who are proud of what we are, what we do, and how we do it.**

The FNB group is regarded as a leader in the use of IT, both in South Africa (McAllister 1994) and worldwide (Computerworld 1995). In 1995 it was the only African company to be included in the *Computerworld Global 100*, in recognition as one of the most outstanding users of IT in the world. These companies are selected by a panel of sixty-five nominated committee members from around the world and the criterion is based on companies and organisations that have made the most intelligent use of information systems, to reach the greatest heights of organisational effectiveness.

Also in 1995, the General Manager of IT was recognised as the *South African Computer Society Personality of the Year.*

In 1996 the group was awarded the prestigious *Computerworld Smithsonian Technology Award* at a ceremony held at the Smithsonian Institute in Washington DC. The group was a winner in the highly competitive finance, real estate and insurance category. FNB was represented at the award ceremony by the General Manager IT, who said, *"FNB has always set out to be the banker to all the people of South Africa, from the sophisticated corporate and retail first world customers, to the emerging third world markets".*

8.2 First National Bank - Current IT Scenario

The IT division operates within a primarily IBM environment and develops and maintains mainframe and personal computer-based solutions for the various business units.
A large percentage of the mainframe systems are based on the HOGAN package, which was purchased from Hogan Systems INC. in Dallas, Texas.

8. Appendix A

8.1 First National Bank - Background

First National Bank Holdings Limited, is the quoted holding company for a leading Southern African financial services group, offering comprehensive retail and commercial banking services to more than six million customers. This bank was formerly known as Barclays Bank DCO, with a history in South Africa dating back to 1838, but commenced trading as First National Bank of Southern Africa in 1987 after disinvestment by Barclays Bank plc. It is the third largest banking group in Southern Africa as measured by total assets of R95 594,4 million. The bank has made extensive use of IT since the early 1960's and together with other local banks, has systems considered to be amongst the most sophisticated banking systems in the world.

The retail banking services are delivered through 801 branches and agencies, more than 1400 automatic teller and self service machines and in the region of 33000 point-of-sale terminals. The group is the largest provider of retail and corporate finance in Southern Africa with products also marketed by subsidiary companies in Botswana, Namibia and Swaziland. It is also the lead bank to the various South African Provincial Governments.

The Card division is the leading VISA card issuer in the country and also administers credit and debit private label cards for retailers. The group also offers insurance and assurance facilities, funds and trust management services, cellular telephony, direct marketing and pension payout in rural areas of the country. Both local and international corporate and investment banking is provided by subsidiary representation points in Zurich and New York. The subsidiary, Henry Ansbacher, provides specialist services to clients in ten different countries in Europe, Asia and the Caribbean. The group trades internationally and offers global electronic banking, computer disaster recovery and electronic data interchange services to its customers. Furthermore the group has correspondent relationships with approximately 2200 prominent banks, in more than 130 countries (First National Bank Holdings Limited Annual Report 1996).

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11. Appendix D

11.1 Detailed Spreadsheet Data

RANK	CRITICAL ISSUE	Average	Res. No. →	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
1	Aligning the IT Organisation within the Organisation	4.03		2	4	2	1	1	3	2	7	11	3	1	3	2	1	1	2	1	2	4	11	3	11	3	1	2	2	11	5	11	1	11
2	Improving IT Strategic Planning	5.55		6	11	9	4	10	2	4	11	1	7	5	11	11	4	11	3	10	5	2	3	1	1	2	2	11	1	7	1	2	11	4
3	Implementing and Managing Collaborative Support Systems	6.00		1	3	7	9	11	4	11	11	6	4	8	11	4	11	2	9	4	2	8	1	2	2	10	2	3	6	2	8	4	8	10
4	Using IT for Competitive Advantage	6.39		11	9	5	11	4	11	1	11	4	8	4	1	1	8	11	11	3	9	11	6	5	8	8	6	4	10	1	3	8	4	1
5	Facilitating and Managing Business Process Redesign	6.74		10	1	11	3	11	1	11	10	10	9	2	4	7	11	11	10	2	1	1	11	9	11	5	4	1	9	3	4	11	6	9
6	Recruiting and Developing IT Human Resources	6.84		11	5	1	5	3	11	11	2	11	2	3	9	9	5	3	1	8	4	11	9	11	3	4	11	11	11	10	11	1	3	6
7	Building a Responsive IT Architecture and Infrastructure	7.05		11	11	11	2	11	6	11	5	11	1	11	8	6	2	6	7	11	11	5	4	11	6	1	10	5	7	9	2	7	2	8
8	Increasing Understanding of IT Role and Contribution	8.00		11	6	11	10	7	7	7	4	7	10	11	5	11	7	4	11	11	11	3	11	10	11	6	3	8	5	11	8	5	7	11
9	Managing the Existing Portfolio of Legacy Applications	8.35		7	11	10	6	5	11	3	11	6	11	7	2	8	11	11	6	11	7	6	7	11	9	11	7	6	5	11	11	11	10	11
10	Improving the Effectiveness of Software Development	8.48		3	8	4	8	11	11	11	3	3	5	6	11	11	11	8	8	11	6	11	11	6	7	11	11	11	11	8	11	11	5	11
11	Making Effective Use of the Data Resource	8.71		4	11	11	11	8	5	10	8	9	11	10	11	5	6	11	11	11	10	9	5	8	4	9	11	11	4	11	6	11	11	7
12	Measuring IT Effectiveness and Productivity	9.10		5	7	8	11	11	11	11	6	2	6	11	10	11	11	11	4	9	11	11	11	11	11	11	11	11	11	5	11	1	11	11
13	Planning and Integrating Multivendor Open Systems	9.29		11	11	9	11	9	10	11	11	11	11	11	11	11	5	11	8	6	8	10	10	11	11	11	8	10	11	11	7	11	11	2
14	Outsourcing Selected IT Services	9.32		11	2	11	11	11	11	9	11	5	11	11	11	11	3	9	11	5	11	11	2	11	5	11	11	11	11	11	11	11	11	11
15	Facilitating Organisational Learning	9.39		9	10	11	7	2	11	6	11	11	11	8	11	11	11	11	11	7	11	7	11	4	11	11	11	11	11	4	11	9	9	11
16	Planning and Managing Communication Networks	9.55		11	11	11	11	9	11	5	9	11	11	11	7	3	11	7	11	11	11	11	8	11	10	7	11	7	11	11	10	11	11	5
17	Developing and Managing Distributed Systems	9.97		8	11	6	11	11	8	8	11	11	11	11	11	11	10	9	11	11	11	11	11	11	7	11	11	11	11	11	6	11	10	11	3
18	Developing and Managing Electronic Data Interchange	10.61		11	11	11	11	11	11	11	11	11	11	11	6	10	11	10	11	11	11	11	11	11	11	11	11	11	11	11	11	6	11	11
19	Facilitating and Managing End-User Computing	10.68		11	11	11	11	11	9	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	9	9	9	11	11	11	11	11

Planning and Managing Communication Networks - (SIM 5)

Using IT for information provision and competitive advantage by the organisation, requires reliable and secure access to internal and external communication networks. The utilisation of communications networks is further complicated by rapid advances in technology and more sophisticated business requirements.

Developing and Managing Distributed Systems - (SIM 3)

Distributed systems create challenges such as, maintaining software versions, data consistency, security, overall control and management of the total environment.

Developing and Managing Electronic Data Interchange - (SIM 19)

The electronic communication with customers and suppliers, via standardised transaction formats.

Facilitating and Managing End-User Computing - (SIM 16)

The promise of improved productivity, which is the main motivation for proliferating end-user applications, is often not fully evaluated, with respect to the dangers of inadequate management and controls. Roles, responsibilities and standards, are extremely important and must be clarified with all participants throughout the organisation.

Improving the Effectiveness of Software Development - (SIM 6)

The delivery of IT solutions to the organisation must become quicker, as the users are dissatisfied with the existing systems backlog and the complexities and cost associated with new systems implementation. Traditional methods, standards and platforms, used in systems development, must be revised to improve all-round IT effectiveness and delivery.

Making Effective Use of the Data Resource - (SIM 7)

The data resource of the organisation is often not easily accessible and therefore underutilised while growing in value, size and overall complexity. Effective utilisation, throughout the organisation, of the data resource as a corporate asset, must become standard practise.

Measuring IT Effectiveness and Productivity - (SIM 11B)

The full impact on bottom-line costs, reduction of operating expenses and the potential for increased competitiveness, must be clearly understood, in order to manage the impact of IT investment decisions.

Planning and Integrating Multi-Vendor Open Systems - (SIM 18)

Many organisations are moving from proprietary, toward vendor-neutral environments based on industry standards. Immature technology and standards, together with large investments in legacy systems, make this task extremely difficult to effectively manage and control.

Outsourcing Selected IT Services - (SIM 20)

Many organisations are no longer relying solely on internal IT for the provision of services, as external companies are often in a better position to do so more efficiently and cost effectively. How to decide on which applications to outsource, as well as the cost implications, cost benefits and risk, are important decisions facing management.

Facilitating Organisational Learning - (SIM 14)

IT and the business, must have the ability to learn continuously and use new technologies, allowing for the appropriate use of IT across the organisation. In many cases, this will necessitate change in business practice and organisational structures.

Recruiting and Developing IT Human Resources - (SIM 8)

Shortage of suitably qualified IT staff, threatens the ability of the organisation to effectively deploy IT. Emphasis needs to be put on keeping abreast of new developments and technologies, as well as developing business skills, such as leadership and teamwork.

Building a Responsive IT architecture and infrastructure - (SIM 1 and 4)

Note: For purposes of this research, the architecture and infrastructure components were combined.

Building a technology architecture and infrastructure that will support existing applications, data relationships and also remain responsive to change. This task is often frustrated by the continuous changes in IT and the increased number of diverse applications requiring support. Another important consideration, must be the cooperative change to the corporate information architecture and the identification of the interrelationships between information categories and business processes, for sharing and integration of data.

Increasing Understanding of IT Role and Contribution - (SIM 13)

Business management often considers IT as an overhead expense and an operational process without much recognition for its strategic contribution and influence. Therefore projects are often not funded and solving of business problems and competitive opportunities are lost. This is mainly due to possible benefits and advantages of IT not being fully appreciated, or understood.

Managing the Existing Portfolio of Legacy Applications - (SIM 15)

Most organisations have large investments in their existing IT systems portfolio, some of which can be replaced relatively soon and others that will be leveraged for many years, before finally being replaced or phased out. The challenge of maintaining the existing systems and also integrating new technologies and operating environments, will place an added burden on IT resources.