Some ad hoc information system issues in South Africa for the new millenium and suggestions as to how to deal with them

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Abstract. Information systems frequently costs organisations between one and ten percent of their gross income. There are several different types of information systems issues and these might lead to a number of organisational issues. Despite this many organisations are unhappy with their investment in information systems as there are numerous examples of failed information systems.

These issues are also common to most organisations using information systems. This paper considers some of these more common information systems fail and discusses some suggestions as to how to deal with these issues. These issues could also apply to other countries.

1. Introduction

We critically review the literature on some issues that occur with the management of the Information Systems (IS) Department in South Africa and develop a framework that will assist those involved in attempting to improve the functioning of the Information Systems Department. This is important because large sums are invested by organisations in information systems and it is essential that waste of resources be avoided [21]. It is not possible to manage the Information Systems Department successfully unless these issues are identified and understood.

Information systems in many organisations are regarded by managers as a substantial expense; often costing organisations one to ten percent of their gross revenue [49]. Despite this, many organisations are unhappy with the value they get from their information systems [35]. There are as many failed information systems as there are successful ones. Successful information systems can bring advantages to organisations such as enhanced efficiency and effectiveness as well as competitive advantage [9]. Failed systems are costly, not only in terms of hardware and software but also in the prestige and morale of the information systems department. Failures of information systems are the primary cause of many organisations’ having to downsize or outsource their information systems facilities. Segars and Grover [47] noted that:

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“The changing nature of IT use requires broader models and methodological approaches which are capable of identifying both past and potential changes in industry structure as a result of technological initiatives. Such methodological approaches are markedly different from those so heavily relied upon in studies of ‘within firm’ impact. Clearly the imperatives, risks and desired outcomes of competitive systems are quite different from the traditional transactions and decision support systems commonly studied by researchers.”

The enormity of the dissatisfaction expressed by managers with the information systems function was highlighted by Cane [7] when he reviewed research conducted by Pagoda Associates in London, and in which they pointed out

“... two thirds of big companies are reducing their IT budgets ... and half the companies have cut the number of (IT) staff they employ while some central IT functions have disappeared completely.”

There are several different issues that could have an effect on information systems departments and the organisations for which they work, which lead to corporate disappointments and consequent losses. Issues such as inadequate financial resources, competency, quality of service, development of Information Systems, culture, etc. are common to all IT-using organisations. In fact, the issues discussed in the following sections may be regarded as generic issues that should be kept in mind while information systems are managed. These issues were gathered from theory and bigger users of IT such as financial institutions.

2. Inadequate financial resources

The first issue is that many organisations do not provide enough financial resources for the information systems activities. This is despite the apparently large sums committed to information systems. The majority of information systems managers regularly express the opinion that they are trying to get a gallon of service out of a litre bottle of resources. Their staff, their equipment and software are frequently stretched to breaking point.

This lack of financial resources results in delays in routine maintenance, delays in enhancements to established systems and to the development of new systems. In some organisations, inadequate financial resources in insufficient help facilities, result in a high rate of user error and production losses.

Chief executives and top managers, in general, simply do not want to authorise the purchase of expensive high-quality information systems and the result is that the right level of systems performance and support is not delivered to their organisations.

Information systems managers have lived with this problem for quite a while and this has given rise to what is often referred to as a creeping commitment. Creeping commitment occurs when information systems professionals tell managers that a system is going to cost R 500,000 when in fact they know it is probably going to cost a million. The information systems professional allows the organisation to spend R 350,000 or R 400,000 and then reverts to top managers with an announcement that the system was under-budgeted and that another R 500,000 is needed. As a substantial amount of financial resources has already been spent, managers feel obliged to commit the additional funds required. This type of corporate behaviour is sometimes cynically referred to as creeping commitment, but, in fact, it is better described as protecting a sunk cost, which could generally be regarded as poor business practice. Under-funding and piecemeal funding of the information systems effort is something for which most organisations eventually pay with delays and poor systems which end up costing the organisation more.
Organisations who under-funded in this way end up with inadequate hardware, and slow response times because of inappropriate software, and jobs are frequently not done the way they should be. In addition, such firms frequently have to pay low salaries and this means they do not get staff of the calibre required. Under-funded organisations frequently do not train, or give very little training indeed. They are often unhappy places in which to work for information systems professionals [42], where the main topic of conversation is, in which organisations are the well-paid jobs being offered. Of course, it is not easy to know how much a particular organisation should budget for its IT. In a sense organisations can produce an almost unlimited demand for computer power to which vendors can supply an almost limitless amount of computer hardware and software. Thus, the task of the managers is to help the information systems professional balance these conflicting pushes and pulls.

An approach to a sensible allocation of resources is to apply the portfolio concept to information systems. This idea, which stems from the McFarlan [8] strategic grid, suggests that in any organisation there are quite different information system types which require different approaches to their management, type of staff required, required application of technology to succeed and financial resources required. This information systems taxonomy, which divides systems into four categories (referred to as strategic systems, factory systems, support systems and turnaround systems), is useful in helping manager's focus on priorities concerning funds allocation.

Strategic systems have the greatest impact on current and future gross income and thus deserve the maximum attention in terms of funding, staffing, technology and management. Factory systems help ensure that the organisation is managed effectively and thus deserve the next level of funding, staffing, technology and management. The support systems deal with routine activities such as payrolls, ledger, etc. These systems should be operated at minimum expense consistent with their reliability. The turnaround systems are the experimental ones: the information systems department's equivalent to research and development. This activity needs to be funded with as much financial resources as the organisation can afford.

3. Competency of the IS department and the end users

The second issue that could affect organisations frequently is the belief that they have to do everything themselves. Thus organisations set up an information systems department that develops a wide range
of systems, programs them, captures the data, operates the computer, looks after the networks, etc. In today’s business environment, this is a poor way of managing the information systems facility. Providing all the information systems requirements on an in-house basis is less efficient and effective than using a combination of in-company and outsourced resources [16,46]. Organisations that use information systems need to identify their core competencies and outsource everything else [3,18,38]. According to Peppard [38]:

“This strategy entails organisations focusing only on the things which they do particularly well: the so-called core competencies. Everything else is outsourced to specialist organisations.”

Thus it is important for the information systems department to understand its own core competencies and to focus on developing these areas. For many organisations, this could mean that routine applications such as payroll, ledgers and registers are outsourced. In other organisations, where the information systems department is not regarded as a part of the corporate core competencies, the entire information systems department may be handed over to the outside [43]. However, total outsourcing is seldom the case. Even organisations like Kodak and Data Dynamics, which are sometimes described as having completely outsourced their information systems, have actually retained a number of people internally to look after strategic and developmental issues. Standard Bank of South Africa, on the other hand, decided to run its information systems department along the lines of an outsourcing company. If this outside company can beat Standard on price and services for computing requirements, Standard’s IS division will concede the business to the outside company.

In general, outsourcing is an important corporate strategy that allows focus to be placed on core competencies. If this is well managed, it will lead to high performance. According to Handy [20], organisations of the future will use outsourcing as a major corporate strategy and this has led him to describe the shamrock organisation shown in Fig. 2. This diagram suggests that organisations will achieve their objectives by having a relatively small number of activities and individuals who attend to the core competencies required. Another group of outsourcers will deliver non-core services and activities. Finally, temporary staff will be used to meet peak periods.

Outsourcing implies the management of a medium to long-term relationship with an emphasis on a collaborative approach and looks at the role of the outsourcing partner [3]. Of course, outsourcing is not without risk, and care should be taken to ensure that the information systems being outsourced are in the hands of a professional and stable organisation.

![Fig. 2. The Shamrock organisation.](image-url)
End users are also notoriously bad at over-estimating their computer skills. Remenyi noted that during his consulting career he has come across many spreadsheet applications that contain critical errors, which render the resulting reports completely meaningless. End users frequently operate with databases whose integrity is highly suspect, thereby producing the garbage in, garbage out phenomenon. End users are infamous for their inability to initiate and maintain reasonable backup and security measures. Data and programs are lost, which costs organisations, in some cases, tens if not hundreds of thousands of Rands. Money spent on end-user training is normally well spent, but unfortunately this is frequently not sufficient, and help desk and hot seat support is also vital. Of course, the issue has been exacerbated by notepad computers as well as wireless networks which constitute the basis of the mobile office. Individuals who are given mobile office systems will need to be expert in their use, if disasters are to be avoided.

Going hand in hand with this, is the issue of expecting the end users to change their normal way of working simply because a new system has been developed. Change seldom occurs naturally or easily. Change usually has to be carefully managed [33] and information systems professionals who have sometimes been charged with overseeing this are simply not equipped for this job. As a result, change management has frequently not produced the required results.

Another issue directly related to competency is that end users’ expectations may be too high [17]. This is particularly unfortunate where the information systems function is seriously under-funded. When this occurs, it is vital for the end users’ expectations to be adjusted to the reality of the resources available. This is sometimes achieved by means of establishing service level agreements for maintenance.

4. Quality of service

The third important issue is that information systems professionals frequently do not listen carefully enough to the needs of their users [34,44]. This is often due to communications problems, but it is also because sometimes they are too busy following a technical agenda of their own. There is considerable difficulty in communications between information systems people and other business people and it affects the quality of service the IS department delivers. In general, business people (especially managers) have little understanding of the computer and telecommunications worlds. In fact, many business people are cyphobic. On the other hand, information systems professionals are generally not particularly familiar with business issues.

In the past, information systems people developed fine applications, which were of little, and sometimes of no use to the people for whom they were intended. This does not happen as frequently today as it did in the past, but nonetheless users are sometimes not consulted as carefully as they really should be and this affects the quality of service. Even when systems deliver the required functionality, sometimes the software is just not sufficiently user-friendly to be useful [17]. Systems are seldom intuitive to the user and it is not uncommon for systems people to write unintelligible manuals [50]. To make sure that users play a full role in systems development, it is important to have them involved from the beginning of the project. In fact, no systems development activity should be initiated unless a user sponsor and a user champion have been identified in advance. In some organisations, users actually head up application development programmes, acting as the team chairperson. This assures a much closer collaboration among all the critical parties towards a successful information system. Without this symbiotic relationship, information systems efforts can waste millions of rands on producing technical excellence, which has little or no practical organisational relevance, and it also affects the service that the organisation delivers.
Another issue is stretching the technological skills of the information systems department staff too far, which affects the quality of the service. Just because the staff was perfectly competent in the development and operation of mainframe systems, it can become an issue if they were to assume that they would be equally capable of operating mid-range and PC systems. Although competence can be transferred relatively easily within the information systems profession, it is necessary to pay careful attention both to training and to the aptitude and the attitude of the individuals concerned. It has long been known that mainframe staff have frequently shown no desire to be involved with personal computers and in some cases have resisted being asked to work in that area. Middle-aged staff working with mainframes have been known to think of personal computers as toys. Simply assuming that people can be easily moved around from one type of technology to another is indeed a notion which will lead to a lot of problems; one of them is that the quality of service could be affected.

It is interesting to note that information systems staff themselves are not known for reacting positively to change. As a profession, information systems people have not rushed to embrace productivity tools [48]. Computer aided systems engineering (CASE) tools [1,14,36] have not been as much of a success as they were originally expected to be. Techniques such as rapid application development (RAD) and joint application development (JAD) [54] are not that frequently used.

In addition, information systems professionals have not always been successful project managers [4,5,29,30]. This is evidenced by the large number of projects which have been late and which have displayed a negative variance with the budgeted amount, at the same time affecting the quality of service that could be delivered by the IS Department.

5. Jumping onto the technological bandwagon too early

The fourth issue, which costs many organisations a lot of money, is that of jumping onto the technological bandwagon [26,28] too early. Some organisations rush to acquire the latest technology as soon as it has been announced. This criticism applies to mainframes, mid-range computers as well as personal computers (PCs). These organisations snap up the latest PCs or the latest mid-range computers, or even the latest mainframes, before all the bugs have been identified and worked out of the system. There are numerous examples of this, of which the problems with Intel’s Pentium is probably the most recent. It is much better for organisations to wait a while and see how robust the new technology actually is before they commit large sums to investment in the latest equipment, or for that matter, the latest software. But even if the technology is stable, there has often been far too much keeping up with the Joneses. Organisations disposed of 80286 machines in favour of 80386 machines, long before it was necessary to so do. It has really only been the arrival of the graphical user interface, and its accompanying software, that has required the high powered processors.

Organisations would have been much better off to have kept their old 80286 machines on which to run the then-current software such as WordStar and SuperCalc for a number of years after they were no longer fashionable. During this period the 80486 computers were introduced following the 80386 computers and the prices of the 80486s fell substantially and thus organisations, by waiting a while, could have obtained much better value for their money. This drive for leading-edge technology seems to be deeply rooted in the psychic of individuals and organisations. One of the aspects of this phenomenon is a naive belief that technology itself can solve these issues [23] and of course this is not the case. In fact, focusing on the technology rather than the business issues or opportunities is indeed a substantial problem [35,49]. Perhaps a motto of the information systems professional should be that the best technology for a job is using the least technology for the job.
6. Developing naive applications

The fifth issue, which has become recognised in the last few years, is that of applying information systems in a naive way. An example is simply automating manual systems. By this is meant that some computer applications took over the original organisational thinking behind the manual approach and simply allowed the old method to operate faster. This approach to computerisation did not attempt to improve the way business was done [12,13,24]. Today this is recognised as an inappropriate method for using computer and telecommunication power. If a manual system is being considered for computerisation, the first step is to rethink the user requirement from a zero base. This approach is frequently referred to as business process reengineering (BPR) and is defined by Dale [10] as

“Business re-engineering is more a question of starting with a novel vision and working back to the detail rather than starting with what exists and finding ways forward. It can be argued that states of benefit such as cost or service is logic enough to provide a method and means to create a shift in performance and a strategic change.”

Although BPR does not by definition imply computerisation in practice, most of these initiatives extensively use computers and telecommunications. Davenport [11], another advocate of BPR, points out that BPR has

“...enormous potential for helping any organisation achieve major reductions in process cost or time, or major improvements in quality, flexibility, service level, or other business objectives.”

This sometimes means that organisations will be completely restructured and old business practices will be entirely abandoned. In other cases, documents which were previously required will be discontinued, and information will simply be transferred electronically. This is the basis of much of the work being done in the fields of inter-organisational systems and electronic data interchange, to mention only two. The motto here is to rethink the business side of the system from scratch.

7. Neglecting to evaluate information systems investment

The sixth issue is to do with evaluation of information systems investment. Because financial resources are scarce in virtually all organisations, there is always competition between different departments, functions or processes for money to undertake required projects. The information systems department is no different, and, in order to ensure that it is supplied with funds, it is necessary for the information systems department to demonstrate its success. This has not been done as frequently or as thoroughly as it should have been and it is now regarded as being a major problem [20,22,31]. Information systems departments, like everyone else, need to justify their existence, and they therefore need to clearly show how they facilitate the organisation’s core business. This is not easy and frequently requires close liaison with the user departments. Together these two groups should be able to present convincing business cases about the current technology as well as future technological needs.

8. The culture gap

Another common issue, which may be considered as number seven, to be kept in mind by information systems professionals is that they tend to separate their discipline or profession from the position which
they hold in the organisation, i.e., they sometimes give the impression that the job they are doing is not as important to them as developing themselves in their profession. The result of this is that they are frequently accused of being more loyal to their profession than to the organisation for which they work. This mistake shows itself in a number of ways.

The discomfort of management, and especially top management, with information systems is best described by Townsend [51] in the following famous quotation:

“First get it through your head that computers are big, expensive, fast, dumb, adding-machine-typewriters. Then realise that most of the computer technicians that you are likely to meet or hire are complicators, not simplifiers. They’re trying to make it look tough. Not easy. They’re building mystique, a priesthood, their own mumbo-jumbo ritual to keep you from knowing what they and you are doing.”

Although the situation described by Townsend pertained to the 1960s and 1970s, many of the problems of inadequate human communication and the consequential suspicion between information systems specialists and other members of staff still remain, and bridging this gap continues to be a major problem in many firms. Deckle [15] develops the culture gap theme by stating that corporate management perceives data processing management as being

“obtuse, purposely enigmatic and ambiguous, overseeing a department populated with bearded, tennis shoed, dreamy-eyed refugees from the video wars.”

In turn, IS management sees corporate management as being

“insensitive, manipulative and totally out of touch with the data processing operation in terms of people, operational dynamics and technology.”

Another interesting insight into the culture gap problem was supplied by Butler [6] when he said:

“At present, the systems function is often thought of by its host organisation as rather like a small group of aliens living on a hostile Earth. The aliens can, through the powers the Earthmen barely understand, make themselves look and talk like Earthmen but they have no emotions, no hopes, no fears and they breed in unconventional ways! Eventually they might take over the world. Until then, they should be ignored as much as possible.”

Indicative of the importance of the culture gap between the information systems department and the rest of the business is the fact that in 1990 the National Computer Centre (1990) defined the objective of Impact, its major research study, as:

“To enable the partners to build the bridge of understanding between the IS management and the organisation it serves so that the organisation is able to make the most effective use of IT to meet its objectives.”

In a more recent publication, Grindley [19] quotes a chief executive as saying

“Like other chief executives, I feel I’m being blackmailed. Not just by the suppliers, I expect that. But by my own IT staff who never stop telling me what the competition are spending . . .”

Although some organisations are fortunately beginning to build bridges of trust and working partnerships between information systems staff and computer users, this distrust issue remains. In fact Grindley [19] points out that the results of his recent research show that
“The ‘Culture Gap’ between those knowledgeable about IT and company managers and users in general is stated by 62% of IT directors to be their top problem.”

It certainly is not easy to close the culture gap and establish the partnerships between information systems and their users that are required for the effective implementation of information systems [25].

This lack of a common culture between the user community and the information systems professional leads to a variety of ineffective business practices, which inevitably leads to systems failures and consequently pushes up information systems costs [19,37,45].

9. Lack of alignment of IT and business strategies

The eighth issue is that IT policy sometimes gets out of synchronisation with the organisation’s overall corporate strategy. According to Porter [39], an organisation has two generic strategies from which to choose. These are the strategy of cost leadership or differentiation. With a cost leadership strategy the organisation delivers a no-frills product or service at an inexpensive price, while the differentiation strategy requires the provision of a high quality product or service at a price premium. Information systems may be used directly to assist the organisation to achieve its corporate strategy. Systems that achieve this are referred to as strategic information systems (SIS). An SIS [40] is also known as a competitive edge system and may be defined as

“an information system which helps a firm improve its long term performance by achieving its corporate strategy and thereby directly increasing its value added contribution to the industry value chain.”

These types of systems deliver real direct business benefits and their development opens up the scope of information systems more than any other previous computer or telecommunications development.

The invention or discovery of strategic information systems was nothing less than a conceptual revolution. It brought information systems out of the back room where they performed routine administrative functions and put them into the corporate spotlight as an integral part of corporate strategy. There are many examples of SIS but some of the firms which have become legendary for these systems are American Airlines, American Hospital Supplies, Merryl Lynch, Levi Strauss, Otis Elevator, Thompson Holidays, Benetton and The Xerox Corporation [41,53].

However, it is possible that the information systems strategy that is used to develop SISs, is out of alignment with the corporate strategy. For example, if the organisation is a cost leader, then the use of expensive information systems to enhance customer service would most probably be quite inappropriate. Likewise, if the organisation is attempting to differentiate itself, then skimping on information systems may result in this strategy not being achieved.

One of the most effective ways of aligning information systems and corporate strategy is by conducting a strategic information systems plan (SISP). A SISP is the process of establishing a programme for the implementation and use of information systems in such a way that it will optimise the effectiveness of the firm’s information resources and use them to support the objectives of the whole enterprise as much as possible. To do this, users as well as professionals have to become highly involved in the information systems planning process [27,52].

It can make a significant impact, not only on information system practices, resources and management, but also on the overall performance of the firm. SISP is a concept that has been evolving over the last ten to fifteen years. It is a development that has grown out of a realisation that the hardware/software
requirements approach to information systems planning was not producing adequate results for the information systems department, or the firm as a whole. SISP involves matching the computer applications with the objectives of organisations so as to maximise the return on the efforts of the information systems department, and also the return earned by the organisation as a whole. Although SISP has its roots in traditional strategic planning, today this technique is used to place strong emphasis on how organisations can identify strategic information systems and thus give the organisation a competitive edge.

Without proper information systems planning and careful attention being given to strategic alignment, poor investment decisions are likely to occur, resulting in inappropriate application systems or even inappropriate infrastructure being developed [42].

An ability to demonstrate regularly the value of the information systems contribution to business performance may be an essential ingredient in the creation of management confidence [2]. Although the identification of IT benefits seems to be logical, it is a strategy suited to IT investment environments that most organisations do not keep in mind. The process of IT benefit identifications does not seem to be appropriate in most organisations [32]. During the IT benefits measurement process, satisfactory performance should be equated with the ability of managers to continuously generate action plans at improving the effectiveness of IT investments and not by their ability to achieve a benefit based on a set of assumptions that can change over time.

10. Conclusion

It is difficult to successfully direct or manage an information systems department. Quality information systems are also expensive to produce and in many cases more expensive to maintain. Systems generally take a considerable amount of time to develop, test and implement. They also require a level of professionalism and expertise from the technical staff, which are often only all too aware of their own importance to the organisation. IT is, therefore, sometimes perceived as being difficult to understand and use by the end-user. Traditionally not enough effort has been expended on the professional management of the information systems function and it is now necessary to rectify this mistake. This requires training for information systems executives in the discipline of management.

In addition, there has not been a service culture among information systems staff. Their focus on technical excellence has outweighed their concern for business issues in general and for their users in particular. Although this has been tolerated for many years, this is now perceived as a mistake that needs urgent rectification.

There are many other challenges which top management and information systems managers or directors have to face in order to operate an efficient and an effective information systems service. Many of these issues have been mentioned in this paper. These challenges have not always been well handled, for many different reasons, and frequently mistakes have been made. Listing some of these issues, this paper suggests some possible courses of action that may be taken to alleviate some of these.

It is hoped that by having thought about these traps, organisations will be more alert to the issues and perhaps they will make sufficient resources available in terms of funds, people and time so that better information systems decisions, and thus ultimately better business decisions, will be made.

References

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