

An Empirical Study of Misalignment Between Australian CEOs and IT Managers

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Abstract

This paper discusses the results of a Critical Success Factors (CSFs) study carried out to determine the key IT management needs of Australian CEOs. In the past several studies to determine the IT management needs have been carried out, but they have aimed mostly at the IT managers, not the CEOs. This study fills this gap, and by comparing the CSFs of the CEOs with those of the IT managers shows the areas of misalignment in the management of IT in Australian enterprises. It is concluded that to achieve ongoing alignment the CEOs and senior executives need to gain management level understanding of IT. But perhaps even more important is for IT managers to develop a business oriented perspective for the success of their enterprise.

Keywords

IS management issues, Critical success factors

INTRODUCTION

As enterprises go through continuous revolutionary changes the task of managing IT has become exceedingly difficult. What is critical today may become irrelevant tomorrow. In addition, business and IT domains in organisations continue to converge at alarming speed. In this complex environment the task of managing IT is no longer the territory of the IT manager alone. Many decisions in regard to Information Technology are clearly outside the scope of the IT managers. Some of the key decisions required for business survival and competitiveness, such as, forming alliances, choosing and linking with partners, taking steps towards electronic commerce, managing the human side of technological change, are examples of IT management decisions that need significant input and commitment from the business executives. It is therefore necessary to understand the areas of IT management that are considered important by the CEOs and the general managers of enterprises.

KEY ISSUES OF IT MANAGEMENT

Over the past two decades numerous studies have been carried out aimed at determining the IT management issues. The aim of these studies has been to identify the managerial and technical issues of most concern to managers (Moynihan, 1990) so that businesses can make decisions about where to commit limited funds (Brancheau and Wetherbe, 1987). Of course, there are some other objectives as well. First, to raise the awareness of IT consultants regarding the current issues and enable them to help their clients more effectively. Second, to help educators develop research programs and course curricula, and educate students in appropriate disciplines. Finally, at the national and global level, to help the policy makers and administrators develop befitting IT policies (Khandelwal, Hosey and Ferguson, 1998).

Among the pioneers in IT management issues studies has been the US Society for Information Management (SIM) study of IS management issues in which the SIM members have been surveyed periodically since 1980 (Brancheau *et al.*, 1996), and their issues compared over time. The Computer Sciences Corporation (CSC, 1999) has also been investigating the IS management issues in the annual surveys of its members in North America and Europe since 1989, and lately in Asia/Pacific. Both these studies have influenced a large number of other studies all over the world aimed at determining the IS management issues in specific countries, geographic regions, or globally (Gottschalk, 2000).

Despite their significance in creating an understanding and awareness of the key IS management issues, these studies have some limitations. First, the key issues framework is typically based on a three- to five-year time horizon. In the current fast changing business environment such a long term projection seems unrealistic. Second, by focusing on issues they miss out on success criteria. Issues lack performance measures. This specifically has been a major shortcoming of these studies because for enterprises to manage the issues appropriately managers require measurable performance indicators so that they are able to address the issues successfully.

In addition, the issues based studies of the past have largely surveyed IT managers. The respondents of sixteen out of twenty key issues surveys carried out since 1990 were IT managers, while those of the remaining four surveys were a mix of IT and general managers (Gottschalk, 2000). The annual CSC surveys (CSC, 1999) have always aimed only at the IT managers. All this gives very little information on the viewpoints of the CEOs. Considering that the worlds of IT and the business managers have seldom converged, lack of this information has the potential of widening this gap, and is not conducive to the health of the business.

Finally, there is the question of lack of representation of public sector, or not-for-profit organisations. In a number of studies investigated, the sample size of public sector, or not-for-profit organisations ranged from only 1 to 19 respondents (Caudle, Gorr and Newcomer, 1991). The public sector enterprises have significantly different goals than private enterprises, heavily impacted by politics and bureaucracy. Being among the major users of IT, with huge investment in technology, their lack of representation in these studies is a major omission.

The purpose of this study is to address these concerns and propose Critical Success Factors (CSFs) as a preferred tool for assisting the enterprises manage IT effectively. A methodology for determining the IT management CSFs is used in a field study aimed at the Chief Executive Officers (CEOs) of Australian enterprises. The CSFs of the CEOs are compared with those of the IT managers, obtained in an earlier survey, and the results analysed. The outcome gives an interesting insight into the worlds of the IT and business managers, and how their key IT management issues differ. The conclusions should help a more focused approach to IT management with both the IT and business managers working in harmony to achieve overall corporate goals.

Critical Success Factors

Critical Success Factors are defined as those few key areas where things must go right for business to flourish (Rockart, 1979). If the management doesn't pay attention to these areas the enterprise performance would suffer. Thus, to manage the CSFs effectively management control information pertaining to each CSF is essential. Considering that management control is the process of ensuring that resources are obtained and used effectively toward the attainment of corporate goals (Anthony, 1965), performance measures are integral to the definition of CSFs.

In practice corporate goals, which are usually medium to long term, are not quantifiable, and are therefore difficult to measure. Further, as mentioned earlier long term planning is unrealistic in the present environment where the pace of change is extremely fast, and often unpredictable. Accordingly there is a requirement for shorter-term quantifiable targets derived from the overall corporate goals. It is this requirement that is effectively fulfilled by the Critical Success Factors, which are “near term” factors critical for the success of the enterprise. As an example, the corporate goal of an enterprise may be “Compliance with statutory regulations”. In absence of detailed information, and proper performance measurements, it would not be possible for a manager to effectively achieve this goal. However, if this goal were broken down into a number of CSFs with quantifiable performance measurements, the manager would be able to focus on it, manage its progress, and successfully achieve it. An example of one of the CSFs pertaining to the “Compliance with statutory regulations” goal may be “Goods and Services Tax (GST) implementation”, defined as, implementing new systems, or modifying the existing ones, to ensure ongoing compliance with GST regulations effective all over Australia from 1 July 2000. Another example could be “Euro currency implementation”, defined as, implementing new systems, or modifying the existing ones, to ensure ongoing compliance with Euro currency regulations effective on specific dates. It is important to note that these one-off critical success factors, of which Y2K problem is yet another example, can consume an extraordinary amount of CEO energy and attention, but generally have not found a place in the above mentioned issues surveys.

It is also evident from the foregoing that CSFs are temporal. In the above example, for instance, as soon as the new systems to ensure ongoing compliance with GST(or Euro currency) regulations are implemented, and the existing systems modified, the CSF would be considered as having been achieved. All CSFs thus belong to a point in time, although they may differ in their degree of temporality. As soon as a CSF is achieved others factors may become critical and join the ranks of the CSFs.

CSFs versus key issues

It is important to note that CSFs are not issues or problem areas, but labels that define areas of significance to the enterprise. Nonetheless, both the IT management issues and CSFs reflect management concerns in implementing the enterprise strategy and achieving its goals. In this respect both the issues and CSFs are similar. The ultimate aim of both is the same- to help enterprises manage IT effectively. Other purposes served by both, as mentioned before, include, raising the awareness of IT consultants regarding the current IT issues, helping educators develop up-to-date research programs and course curricula, and assisting the policy makers develop befitting IT policies.

However it is the two major shortcomings of using the issues approach, discussed earlier, that can be overcome by using CSFs in the achievement of the above aims (Munro and Wheeler, 1980; Martin, 1982). First of these shortcomings is the lack of performance measures of issues which makes them difficult to monitor. In contrast CSFs have performance indicators integral to their definition, making them far more appealing and useful to managers. Second is the long-term time horizon usually associated with issues. While issues are defined as important questions in dispute that must be settled (Webster's Revised Unabridged Dictionary, 1998), CSFs pertain to a crisis, or a turning point in time. In the context of revolutionary changes, therefore, CSFs with their temporal characteristics provide a more attractive approach. It is for these reasons that the CSF approach was chosen as the basis for this study.

METHODOLOGY

To determine the CSFs of managers a number of techniques exist. Prominent among them are structured interviewing (Bullen and Rockart, 1981), focus groups, the Delphi technique (Brancheau, Janz and Wetherbe, 1996), Q-sort method, the group interview (Khandelwal, 1992), and the survey approach. Each of these techniques have their respective strengths and weaknesses.

With the desire to have a large survey sample of CEOs dispersed throughout Australia it was decided to use the mail out survey approach, similar to the one used in an earlier study to determine the CSFs of IT managers (Khandelwal and Ferguson, 1999). This among other things provided a vehicle for comparison between the CSFs of the Chief Executive Officers and IT managers. The enterprises selected consisted of 1000 of Australia's largest enterprises divided equally between private and public sectors, that is, 500 topmost private sector enterprises (by revenue), and 500 largest public sector enterprises (by number of employees).

There are a number of limitations attributed to the survey approach (Galliers, Merali and Spearing, 1994). First, the response rate of a survey is generally low. Second, there is no control on who in the enterprise would respond to the survey. To attribute the responses of an individual to the whole enterprise can be questionable. Third, no theoretical model exists for determining the CSF constructs in the survey instrument that would cover the whole range of current enterprise issues.

These limitations were addressed in a number of ways. To maximise the survey response each mail out was personally addressed to the individual CEO. The importance of the study was highlighted by including a letter from the Prime Minister of Australia in support of the study. Also the respondents were promised a complimentary copy of the executive summary of the study report. To ensure that only the desired respondent from the enterprise, namely the CEO, responds to the survey it was clearly mentioned that the survey was meant to be completed by the CEO, and was not appropriate to be completed by, for example, the IT manager.

CSF constructs and survey instrument

Two other important considerations in the mail out survey method which need elaboration are development of the CSF constructs, to be rated or ranked, by the survey respondents, and the design of the survey instrument. CSF constructs form the foundation of the mail out survey method, therefore use of an appropriate set of CSF constructs is perhaps the most important task of this method. For this survey a set of 24 CSF constructs developed using a six step process (Khandelwal, 1999), shown in Table 1 were considered most suitable.

Business IT Management	Executive Technology Management	People IT Management
1 GST implementation	11 Executive information systems	20 Educating senior management in IT
2 Electronic Commerce	12 IT infrastructure	21 Maintaining IT staff levels
3 Globalisation	13 Client-server systems	22 Business skills of IT staff
4 Assessment of business value of IT	14 Workflow and work management	
5 Reducing IT costs	15 Use of emerging technologies	User IT Management
6 IT for competitive or significant advantage		23 Achieving user expectations
7 Alignment of IT and organisational objectives	IT Governance	24 Attaining user autonomy
8 Reengineering of business processes	16 Outsourcing IT	
9 Post Year-2000 problem readiness	17 Running IT as independent business	
10 Business continuity planning	18 Joint research	
	19 Strategic IT alliances	

Table 1: List of CSF constructs included on the survey instrument

The above CSF constructs with their full definitions formed a major part of the survey instrument. Blank space was provided for additional CSFs in the event that any of the respondents wished to nominate additional areas of importance to their enterprises. For each CSF construct on the survey instrument, respondents were asked to rate each construct as applicable to their enterprises, using the following Likert scale.

- 1 Critical for year 2000
- 2 Important for year 2000
- 3 Likely in year 2000
- 4 Nice to have in year 2000
- 5 Not for year 2000

Considering the temporal nature of the CSFs, an additional option for the respondents indicating that the CSF is already accomplished was included because if the CSF is already achieved none of the above options are meaningful. Note that the rating scale focused the attention of the respondents on the importance of the CSFs to them and their enterprises for year 2000- rather than their view from a longer term, less urgent perspective.

After rating each of the CSFs, respondents were asked to review the list, select their top three CSFs for year 2000, and write them in the order of importance in the space provided on the survey instrument. The respondents were finally asked to estimate the percent certainty that they would attach to actually achieving each of their top three CSFs during year 2000.

ANALYSIS AND RESULTS

The survey was conducted in September 1999. A total of 212 responses from the CEOs from all over Australia were received, giving a response rate of 21%. This compares favourably with the 16-24% response rate of the CEO surveys conducted in the US, Canada and UK (Falcnor and Hodgett, 1999). The enterprises covered a cross section of industries, namely, Building & construction, Commercial, Mining, Education, Finance & insurance, Federal, state and local government, Health, Legal, Manufacturing, Production, Retail, Utility, Wholesale, and Distribution, with an almost even distribution between public sector (49.5%) and private sector (50.5%). Of the enterprises responding 7% had 100 or fewer employees, 30% had 101-500 employees, 19% had 501-1000 employees, and 44% had above 1000 employees.

Responses for each of the CSFs were tallied and the percentage responses for each of the five point Likert scale were then determined. In addition, responses regarding the CSFs identified by respondents as being the “top three” were compiled and the percentage of respondents listing each of the CSFs in their “top three” was determined. 10% respondents who didn’t list their top three CSFs, had their responses excluded from this part of the analysis.

For ranking purposes the CSFs were clustered into four quartiles ranging from the most important to the least important. The first six CSFs (1st quartile) were those with the highest response rate in the “top three” as discussed above. The last quartile CSFs were those that had the highest percentage rating of “Not for year 2000”, not applicable, or already accomplished. The second and third quartile CSFs were sequenced by their mean rating. The results are shown in Table 2.

1 st Quartile CSFs	3 rd Quartile CSFs
1 GST implementation	13 Assessment of business value of IT
2 Alignment of IT and organisational objectives	14 Attaining user autonomy
3 Reengineering of business processes	15 IT infrastructure
4 IT for competitive or significant advantage	16 Reducing IT costs
5 Achieving user expectations	17 Use of emerging technologies
6 Executive information systems	18 Strategic IT alliances
2 nd Quartile CSFs	4 th Quartile CSFs
7 Maintaining IT staff levels	19 Globalisation
8 Business skills of IT staff	20 Client-server systems
9 Business continuity planning	21 Workflow and work management
10 Electronic Commerce	22 Joint research
11 Educating senior management in IT	23 Outsourcing IT
12 Post Year-2000 problem readiness	24 Running IT as independent business

Table 2: CSFs: Most important to least important for year 2000

Details of the most important (1st quartile) CSFs, including the percentage of respondents who have already achieved them, or to whom these are not applicable, are shown in Figure 1. It is evident that “GST implementation”, which is by far the most critical CSF (with 57% respondents nominating it as one of their top three CSFs) has also a very low achievement rate. Only 2% respondents said that they have already accomplished it, or that it is not applicable to them. Furthermore, those who are still in the process of accomplishing it, have rated “Alignment of IT and organisational objectives” among the six most critical factors. This is despite its high achievement or non-applicability rate of 19%.

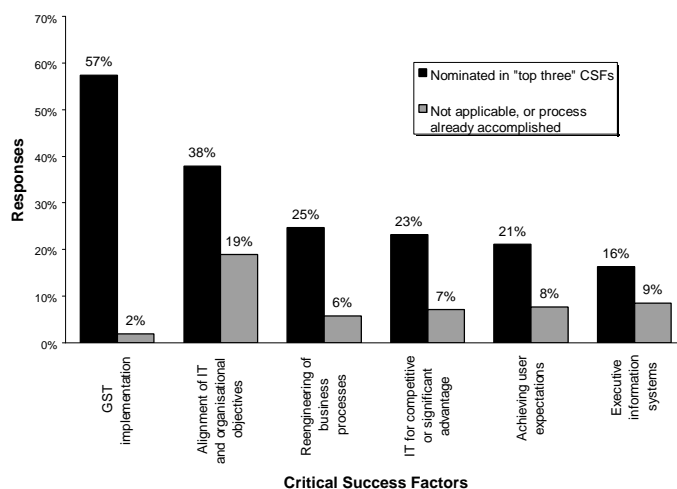


Figure 1: Critical Success Factors for CEOs

These CSFs, which are ranked topmost by the Australian CEOs, are clear evidence of the importance the CEOs are attaching to the impact of external forces on their enterprises. Firstly, there are the regulatory forces, usually time bound, such as, the implementation of GST by 1 July 2000. For this particular CSF warnings have been sounded that enterprises face financial ruin if they are not able to properly manage it in time. It is therefore not surprising that it is the topmost IT management item for the CEOs. While it might seem like a one-off event, items such as this are showing up quite regularly, not only in Australia, but all around the world, demanding urgent senior management attention. In Canada, for example, some businesses did not survive the introduction of GST as they did not get ready for it in time, and

couldn't collect taxes properly (PKF, 1999). More recently introduction of common European currency, and the Y2K problem, consumed inordinate amount of enterprise resources and energy.

Secondly, there is an increasing need for enterprises to be able to manage the external market forces. This is evident from the fact that "IT for competitive or significant advantage" and "Reengineering of business processes" have both been ranked among the top quartile CSFs by the CEOs. The signal that they are sending is that the enterprises must stay agile and competitive in an environment where the business rules are changing by the day. Also it is no longer sufficient to attain marginal increases in enterprise effectiveness. Instead, dramatic improvements are stipulated, to be achieved by radically changing the ways of doing business and by reorganising the internal business processes of the enterprise.

Further, it is clear that for enterprises to achieve their corporate objectives the information systems supporting the business processes have to give right management information, at the right time. This has resulted in the inclusion of "Achieving user expectations" and "Executive information systems" ranked among the top quartile CSFs.

Finally, IT in an enterprise must align with the organisational objectives. There could be at least two explanations for why such an important issue has not been resolved despite it being one of the topmost issues in a number of studies (CSC, 1999).

First, in the early days of information technology, key business strategies often focused heavily on achieving high ROI, and therefore alignment could be achieved by developing high volume, operational applications, that contributed to ROI objectives. Today, ROI is not the only measure of success for an enterprise; thus requiring IT functions to achieve alignment with business objectives by providing a broader, more complex range of support.

Second, rapid changes in today's business environment make it even more difficult for IT to achieve and sustain alignment with business objectives. Frequently, it is not easy for management to rapidly translate changing strategies into current business objectives, let alone communicate these objectives effectively throughout the enterprise. If communication of objectives does not occur on a timely basis, it becomes difficult if not impossible for IT to achieve alignment with the business as a whole.

Least important CSFs

The significance of least important CSFs is that being factors of lesser importance the management should be cautious in deploying scarce corporate resources in these areas. The following CSFs were ranked as least important for year 2000, with the least important listed first.

- Running IT as independent business
- Outsourcing IT
- Joint research
- Workflow and work management
- Client-server systems
- Globalisation

Nearly half of the respondents consider "Workflow and work management" and "Client-server systems" either not applicable to them, or that they have already accomplished them, making these two CSFs among the least important for Australian CEOs. However, in the case of the remaining four CSFs a significant number of respondents (ranging from 22%-35%), while conceding that these CSFs are required by them, do not consider them necessary for business success in year 2000.

With the nineties being hailed as the era of globalisation a low priority for “Globalisation” CSF (defined as, “Establishing processes aimed at deploying IT as an enabler to globalise the enterprise’s reach”) is surprising. Only 9% respondents from private sector and 1% from public sector have rated it as one of their “top three” CSFs for year 2000. Furthermore 19% of public sector enterprises and 24% private sector enterprises do not have globalisation on their business plan for year 2000.

Comparison of Critical Success Factors of CEOs and IT Managers

Studies in the past have shown that what the CEOs consider to be their key IT management issues are not always the same as those of the IT managers. Moynihan (1990) found that the CEOs and IT managers showed major differences in five out of eleven key issues that he investigated. Galliers *et al.* (1994) also discovered a number of differences, observing that while the general managers are more concerned with an overall corporate picture, the IT managers place IT at the centre stage. Similar conclusions were arrived at by Pervan (1997) saying that the CEOs have a more organisation wide focus, while the IT managers are concerned with their specific role in managing the IT function.

DeLisi, Danielson and Posner (1998) in a study involving in-depth interviews of the CEOs of six large international firms found that the CEOs believe that their IT managers while good with the technical skills did not always display an understanding of critical business issues. This together with the finding that the CEOs think that IT is indeed critical for their firms (DeLisi *et al.*, 1998), demands that the role of IT manager should change from just managing technology, to executive management.

To probe into the lack of alignment of business and IT the Critical Success Factors of the CEOs obtained above were compared with those of the IT managers from an earlier survey (Khandelwal *et al.*, 1998). Table 3 shows the top six CSFs for CEOs and those of the IT managers from which it is clear that none of the CSFs are common to both, except “Alignment of IT and organisational objectives”. This clearly demonstrates the disparity in the views of these two groups of managers. By nominating “GST implementation”, “Reengineering of business processes”, and “IT for competitive or significant advantage” as their key CSFs the CEOs show that their focus is on organisation wide business issues. They also indicate that they need help in these areas (“Executive information systems” and “Achieving user expectations”). On the other hand the IT managers appear to be concentrating more on IT management and technology issues (“Achieving year 2000 compliance”, “Strategic IT plan development”, “Disaster recovery planning”, and “Integrating systems”).

CEOs
GST implementation
Alignment of IT and organisational objectives
Reengineering of business processes
IT for competitive or significant advantage
Achieving user expectations
Executive information systems
IT managers
Achieving year 2000 compliance
Alignment of IT and organisational objectives
Strategic IT plan development
Disaster recovery planning
Integrating systems
End user service management

Table 3: Top six (top quartile) CSFs for Management of IT

Statistical analysis of the significance of difference between the responses of CEOs and IT managers given in Table 4 shows ten CSF constructs with significant difference ($p < .05$) between the responses of the CEOs and IT managers. It should be noted that because the CSF construct sets for the two surveys were not identical, only 18 common CSF constructs were used for the comparison. The constructs “GST implementation”, “E-commerce”, “Globalisation”, “Post-Year-2000 problem readiness”, “Joint research”, and “Strategic IT alliances” were not included in this analysis as they were not present in the IT managers’ survey. Also the IT managers’ survey had used a four point Likert scale (1=Critical, 2=Important, 3=Nice to have, 4=Not required). Of the several options considered to obtain a valid comparison, the CEO responses of 3 (Likely), and 4 (Nice to have), were added together to achieve an equivalent four point scale.

Critical Success Factor	CEOs			IT Managers			t-test for Equality of Means			
	Mean	Std. Deviation	Std. Error Mean	Mean	Std. Deviation	Std. Error Mean	t	df	Sig. (2-tailed)	Mean Difference
Workflow and work management	2.03	0.81	0.0813	2.47	0.89	0.0677	4.11	218	0.000	0.4345
Client-server systems	2.16	0.84	0.0825	2.60	1.04	0.0888	3.58	238	0.000	0.4337
Educating senior management in IT	2.37	0.75	0.0549	2.06	0.87	0.0660	-3.59	340	0.000	-0.3084
Attaining user autonomy	2.49	0.78	0.0574	2.85	0.91	0.0691	4.04	340	0.000	0.3632
Executive information systems	2.20	0.85	0.0608	2.51	0.95	0.0738	3.21	332	0.001	0.3070
Assessment of business value of IT	2.48	0.83	0.0590	2.18	0.96	0.0732	-3.25	341	0.001	-0.3055
Achieving user expectations	1.76	0.73	0.0526	1.98	0.71	0.0531	2.94	370	0.003	0.2199
Alignment of IT and organisational objectives	1.62	0.74	0.0563	1.80	0.79	0.0621	2.19	327	0.029	0.1838
IT for competitive or significant advantage	2.02	0.86	0.0614	2.23	1.04	0.0789	2.14	338	0.033	0.2139
Use of emerging technologies	3.08	0.76	0.0544	3.24	0.85	0.0645	1.97	348	0.050	0.1659

Table 4: CSFs with most significant differences between CEOs and IT managers

Four of the CSFs in Table 4, namely “Alignment of IT and organisational objectives”, “IT for competitive or significant advantage”, “Achieving user expectations”, and “Executive information systems” need special mention. These four CSFs have been ranked among the topmost six Critical Success Factors by the CEOs (refer Table 3). In other words, there is significant difference in the views of the CEOs and IT managers in majority (four out of six) of factors critical to the CEOs. It is also worth noting that out of ten CSFs with statistically significant difference between the responses of the CEOs and IT managers shown in Table 4, eight have been rated higher in importance by the CEOs than IT managers. Only two, namely “Educating senior management in IT” and “Assessment of business value of IT”, have been rated higher by the IT managers.

The above clearly identifies the areas where there is a major mis-alignment between the views of the CEOs and IT managers of Australian enterprises. Although aligning business and IT is a joint responsibility, since the CEOs are at the helm of the enterprise, responsible for the overall business strategy and direction, it becomes the task of the IT managers to facilitate aligning the objectives of the IT function with those of the business. This is not an easily achievable task as the experience of the past years has shown. Nevertheless the first step towards this can be taken by the IT manager, by getting involved in the business decision

making processes of the enterprise. This will also help in channelling the use of IT to achieve competitive or significant advantage (the latter particularly for public sector organisations). The IT function's business oriented behaviour will then go a long way towards fulfilling the information needs of the users and executives. This is what IT managers must work towards.

CONCLUDING REMARKS

Based on the responses of the Australian CEOs it is clear that they regard Information Technology critical for the success of their enterprises. Also they are looking to the IT function to help them manage the external forces impacting their enterprises. The IT managers on the other hand are focussing their attention on technological issues, rather than enterprise-wide business issues. This is causing misalignment between business and IT. Both the IT managers and the CEOs know that there is a critical need to align business objectives with IT. The IT managers' view is that one way in which this can be achieved is by educating senior management in IT. The CEOs on the other hand believe that the IT managers have to get involved in the business issues of the enterprise. No doubt to obtain maximum benefit from IT, the CEOs and other senior executives need to gain an understanding of technology, but at the same time it is even more important that IT managers develop a business oriented enterprise-wide perspective to achieve proper alignment between business and IT.

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