Executive Summary

Given the ever-increasing importance of information technology (IT) to corporate success, board scrutiny of IT activities is a critical issue. This study conducted interviews with board chairs and board members of 17 medium to large corporations, most with global operations. Our question to them: “How much attention does your board give to a range of IT-related issues, specifically, the CIO’s IT vision for the company, the IT strategic plan, major IT application decisions, IT leadership, IT functional structure, IT function effectiveness, IT risk and exposure, and whether or not IT applications provide competitive advantage?” We also interviewed the Chief Information Officers (CIOs) at these 17 firms about their view of what their boards ought to be considering.

We found an “IT attention deficit” in these boards. The CIOs were nearly unanimous that boards should pay attention to: the IT vision, the IT strategic plan, IT competitive advantage, IT effectiveness, IT risk, and very large application development decisions and projects. All 17 boards were unanimous only on paying attention to IT risk. One-half the boards of the financial services firms had discussed the other topics. But none of the boards of the primary resource firms (energy, mining, forestry, agricultural products, and oil exploration and extraction) had discussed the other topics.

After recounting the specifics of this research, we suggest six ways boards can reduce their IT attention deficit: (1) include IT on the board agenda, (2) invite the CIO to board meetings, (3) elicit brief CIO presentations, (4) recruit IT experience onto the board, (5) get the board talking about IT, and (6) realize that boards now operate in an IT era.
and how they can “gain traction” in this sometimes difficult area.

**RECENT RESEARCH FOUND BOARD IT OVERSIGHT LACKING**

Little academic research has been published about boards and IT because board members are exceptionally busy, and boards are secretive. Thus, most academic research has been conducted “from afar”—the researchers have examined third-party evidence but not talked directly to board members.

Richard Nolan and Warren McFarlan recently drew on their corporate experiences to examine the IT role boards should play.\(^3\) They propose a simple contingency model based on the IT Strategic Grid (discussed below). Their general position is that most boards are not performing enough IT oversight: “A lack of board oversight for IT activities is dangerous; it puts the firm at risk in the same way that failing to audit its books would. The question is no longer whether the board should be involved in IT decisions; the question is ‘How?’” Nolan and McFarlan do not argue for a one-size-fits-all approach, stating, “The IT strategy that works for a clothing retailer is not appropriate for a large airline; the strategy that works for eBay can’t work for a cement company.”

Jim Cash and Keri Pearlson recently commented on how sweeping regulatory changes have increased boards’ need to solidly understand IT.\(^4\) Along with Nolan and McFarlan, they call for wider use of mechanisms to improve IT oversight, including adding IT-knowledgeable board members and creating IT board committees.

Both articles propose what boards ought to do, based on the authors’ personal experiences. Neither addresses what boards are actually doing today.

Ernest Jordan and David Musson recently interviewed 13 board members in Australia\(^5\) to understand how their boards handled electronic commerce risk management. Jordan and Musson concluded that the general level of knowledge about IT and e-commerce was very poor among the directors they interviewed. Most of the directors had only “survival skills in IT,” at best. The boards’ approaches to reviewing e-commerce ventures varied widely. They generally made heavy use of consultants but limited use of board audit committees.

**THIS STUDY CONTRASTS BOARD IT OVERSIGHT AT COMPANIES WITH STRATEGIC IT VERSUS SUPPORT IT**

This study aimed to fill the research gap by talking directly to board chairs or senior board members. Further, it aimed to contrast board involvement in IT governance in two quite different industries: financial services and primary resource.

The eight financial services firms (banks, investment management, stock exchanges) ranged in size from an investment management firm with CDN$19 million in annual revenues to a national bank with CDN$12 billion in annual revenues.

The nine primary resource companies (energy, mining, forestry, agricultural products, and oil exploration and extraction) ranged in size from an oil and gas exploration company with CDN$170 million in annual revenues to a pipeline company with CDN$14 billion in annual revenues. See Appendix A for a complete listing, by number of employees and annual revenues.

We chose these two industries to see whether or not their differing reliance on IT would provide insights into board-level IT governance. Broadly speaking, financial services companies tend to have higher information intensity than primary resource firms. Therefore, the financial services firms would be expected to use IT as a foundation for their competitive advantage more so than the primary resource firms. Thus, the financial services boards would be expected to be more closely involved in IT oversight than the primary resource boards.

The selection of companies was also motivated by academic work by the faculty at the Harvard Business School, specifically the development of the Information Technology Strategic Grid (Figure 1).\(^6\) This grid theorizes that management can better
understand IT’s role in an organization by examining the strategic impact of both its existing IT operating systems and its plans for future IT systems. The grid yields four company environments, shown in Figure 1:

- “Strategic”—companies strategically depend on both the smooth functioning of their current IT systems and the successful implementation of new IT systems for competitive advantage.
- “Turnaround”—companies do not strategically depend on their existing systems but will depend on their new IT systems to reach their future corporate goals.
- “Factory”—companies strategically depend on their existing systems but not on their future systems.
- “Support”—companies do not strategically depend on either their existing or future IT systems.

The eight financial services firms were selected to represent companies with strategic IT. The nine primary resource firms were chosen to represent companies with support IT. These choices were reaffirmed from information gathered during our interviews. See Appendices B, C, and D for descriptions of the interview process and the questions asked.

The “five-day IT fiasco,” described earlier, demonstrates one Canadian bank’s reliance on IT. The bank’s CIO also noted that the bank is investing heavily in IT to gain future competitive advantage. This bank represents a company with strategic IT.

In contrast, a mining company’s board chair/CEO pointed out that even if the company’s information systems stopped working completely, its operations would not be significantly affected, “Our trucks would still keep running. If we had to, we could keep track of everything with a manual spreadsheet.” Furthermore, this firm’s CIO did not see this situation changing in the foreseeable future. This mining company represents a company with support IT.

The interviews aimed to discover whether or not the boards of companies with strategic IT were, indeed, more involved in IT governance than the boards with support IT.

**THE REALITY: BOARD-LEVEL ATTENTION TO IT**

To probe boards’ attention to IT, we drew on the advisory entitled “20 Questions Directors Should Ask About IT,” prepared by the Canadian Institute of Chartered Accountants’ Information Technology Advisory Committee. The CICA “developed this brochure to guide members of boards of directors in evaluating information technology issues that might
arise while they discharge their board responsibilities.”

The interviews with board chairs and members asked them how much time their board spent discussing the CIO’s IT vision for the company, the IT strategic plan, major IT application decisions, IT leadership, IT functional structure, IT function effectiveness, IT risk and exposure, and whether or not IT applications provide competitive advantage. Following are the findings in these areas.

**Board Discussions of the IT Vision, IT Strategic Plan, and IT Competitive Advantage**

**IT Vision.** Boards of the 17 companies were vitally concerned about their company’s strategic vision. But only one bank board and one energy company board had discussed, debated, or even heard brief presentations on their company’s IT vision per se. As a board member of another large bank said, “The board would certainly look at an overall corporate vision, but would not concern itself with an IT vision. That would be regarded as more of a management issue.” A finance company board chair stated (only partially in jest) that his board members were “all too old to be able to consider an IT vision.”

**IT Strategic Plan.** Four boards had discussed elements of the IT strategic plan in discussions of the corporate strategic plan. However, the remainder had never discussed the entire IT strategic plan or its alignment with the corporate strategic plan as a line item on their agenda.

In short, in both the financial services and primary resource industries, the boards focused on overall corporate vision and strategy, not components, such as IT vision and strategy. Only in special circumstances, such as Y2K or mergers, had IT strategy been a specific line item on a board agenda.

**IT Competitive Advantage.** Similarly, only two boards had ever specifically discussed issues surrounding the competitive advantage conferred by their technology or systems. These discussions were in the context of a large capital expenditure, such as for an ERP system. As one board chair noted, “Our concern is not so much gaining advantage over competitors as making sure that competitors don’t gain advantage over us.” The two boards that did discuss competitive advantage focused on tracking competitors and reacting quickly, rather than innovating and pushing ahead of competitors.

**Board Discussions of IT Leadership and IT Function Effectiveness**

**IT Leadership.** Boards commonly play a role in hiring and overseeing the career development of senior executives. This oversight can be handled by the board or a board committee, such as the HR committee or compensation committee. Boards also oversee the effectiveness of senior management. The CICA’s position on IT hiring and career development is that “the board bears the ultimate oversight responsibility for the existence and effectiveness of programs to select and retain skilled senior IT personnel, just as it does for other senior executives.”

In this study, though, only two financial services boards would be involved in CIO hiring or CIO development issues. Furthermore, this oversight would be by the compensation or HR board committees in these two firms. Board members stated that the CIO was too far down the hierarchy for the board to be directly involved.

While such lack of direct board involvement in CIO recruitment and development may be appropriate in companies with support IT, it is less so in financial services firms, whose boards should at least question whether or not appropriate procedures are in place to identify, attract, and retain top talent. We heard no such indications in the interviews.

**IT Function Effectiveness.** Boards rarely, if ever, concerned themselves with the effectiveness of their IT function. They viewed IT managerial performance as the domain of senior management, not the board. Some of the boards did receive summaries of major IT benchmarking studies or cost comparisons, but they did not spend much time on these matters. As one energy company board chair stated, “We rely on our auditors to monitor such things as IT effectiveness.”

All five banks (as opposed to their boards) in this study did evaluate IT effectiveness. But their boards were made aware of the results only when major problems surfaced, and then, only in a highly aggregated form. Two board chairs mentioned that the only time their board considered IT effectiveness was to justify major IT outsourcing. “We decided that they [the outsourcers] could run this stuff better than we could,” one of the chairs noted.

**Board-level IT Governance Mechanisms**

In the past few years, a number of companies, including FedEx, Hewlett-Packard, Proctor & Gamble, and Wal-Mart, have decided that their
information technology and systems are so important that they deserve a dedicated board-level governance mechanism. Such a decision might link to the large size of the IT investment relative to the corporate budget, or to the view that information technology and systems are critical success factors. These and other firms have established IT governance committees of the board, on a par with their existing audit, compensation and governance committees. Nolan and McFarlan argue that companies in either the “turnaround” or the “strategic” quadrants of the Strategic Grid should have at least one IT expert on the board and have a board-level IT governance committee. Firms in the “strategic” quadrant should go further by having an IT expert as that committee’s chair.

In stark contrast to this advice, not one of the 17 firms in our study had established an IT committee of the board, and only one had ever even considered the notion. Furthermore, only two primary resource companies and two banks had an IT expert on their board. Even in these four cases, these members were not appointed to the board primarily for their IT expertise; that expertise came as a side benefit. Strong knowledge of IT was not believed to be an appropriate recruiting criterion, in and of itself, for future board members. One board chair expressed a common view, “We are looking for more of a mix of competencies.” Another board member noted, “No one on our board has come up through the IT ranks in other companies. We are looking for board members with knowledge that you cannot get from the management ranks.”

Fifteen firms in the study centered their IT governance in their board audit committee—to the extent they had any board-level IT governance. Audit committees normally focus on internal auditing, financial processes, internal controls, and financial statement preparation. One bank board member made a typical observation, “The bank’s audit committee provides IT governance in the form of assurances to the full board concerning appropriate controls, large projects going off the rails, that sort of thing.” However, many of the respondents indicated that the agendas of their audit committee were so full that they had little or no time for IT governance, except if it crossed paths with their main financial auditing responsibilities. Indeed, the board members in this study often questioned whether more attention to IT governance was even possible in light of the heavy workload already being shouldered by their boards.

**Board Discussions of IT Risk, Security, and Business Continuity**

**IT Risk and Security.** Organizational risk and security are frequent subjects of board discussions. The general concern is unforeseen events threatening the company’s operations, or even its very existence. Class-action lawsuits, industrial accidents, executive malfeasance, terrorism . . . the list of possible sources of risk is almost endless. IT risks arise from potential privacy violations, system outages, hackers, cost overruns, and numerous other sources. Board-level discussions of IT risks generally occur in discussions of “business continuity,” that is, planning the steps to be taken to keep the business running if certain disasters occur.

In spite of the obvious potential for IT outages to disrupt the firm’s business operations, only two financial services firms and one primary resource firm indicated that their full boards would spend time discussing IT-related risks per se. In the other 14 companies, IT risks were not addressed by the board, except in rare circumstances. For example, some boards did consider Y2K-related risks in late 1999. More likely, such risks are handled by the board audit committee. But, as noted earlier, audit committees’ agendas are already very full, so IT risk has low priority.

**Business Continuity.** IT risk, as it relates to business continuity, was the only item that differentiated the financial services boards from the primary resource boards. Financial services boards expressed a notably stronger concern about business continuity in the face of IT disasters than did the primary resource boards. As one financial sector CEO stated, “Risk is always a ‘top of mind’ issue at the board, including IT risk.” Another financial services board member noted that IT risk exposure and related business continuity issues constituted “by far the largest IT topic to be discussed by the board.”

**Board Discussions of Other Major IT Issues**

**Capital IT Investments.** Companies of all sizes have debated for years about how to best make decisions about investing in IT systems. These decisions are often strategic because they can affect the company’s competitive position and long-term viability. Thus, boards might need to make some of the more important IT investment decisions. In our sample, however, none of the boards regularly considers application project decisions. In fact, at four of the
17 companies—including one large bank—the board has never considered IT application investments. One primary resource board member stated why: “Few board members would be sophisticated enough with respect to IT to be able to knowledgeably follow a discussion on such issues, much less debate them.”

In the other 13 firms, the boards were informed only about very large and expensive systems projects, such as ERP. One primary resource board chair noted that his board “would only hear about applications valued at more than $10 million.” However, even in these cases, the board only heard about the decision after it had been made. So, the purpose was to keep the board informed, but not involved. And, as with board considerations of IT strategy, this notification occurred during discussions of the firm’s overall upcoming capital expenditure plans (not just IT expenditures).

**Structure of the IT Function.** The centralization-decentralization debate on IT’s structure has gone on for years. More recently, the question of whether or not to outsource parts or all of IT has been added. Questions of appropriate structure also arise during mergers and acquisitions. Such decisions can affect IT’s responsiveness and the firm’s effectiveness.

We wanted to know, “Have the boards of directors ever considered this issue, either directly or in some other context?” Our respondents indicated that the organization of IT function would not normally be a board’s concern. It was the domain of management. But two exceptions were noted. One, the organization of IT might come to the board as a component of a larger issue, such as corporate restructuring. Two, a large, one-time decision concerning outsourcing would probably be considered by the board, specifically with respect to the risks of such a move.

**Oversight of Large IT Projects.** Bringing large IT projects in on time and within budget, and delivering the projected business value, is as challenging today as ever. Given the risks and the potential effects of failure on corporate performance and competitiveness, we asked whether the boards exercised oversight in such instances. Nearly all the respondents noted that little or no active board oversight of IT projects took place, even for large projects. A board member of a large primary resource company mentioned a recent two-year-long project to integrate a number of the firm’s systems. During that time, the board never received any reports on progress or completion. In a few cases, boards did receive occasional reports of progress for very large projects, typically those with budgets exceeding $10 million (or $100 million in the

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**Six Generalizations on Board Attention to IT**

Six generalizations concerning board attention to IT emerged from our interviews. While these generalizations directly extend to financial services and primary resource firms, we have reason to believe they apply more widely as well.8

1. **Full boards spend almost no time addressing IT issues directly.** What little time they do spend on IT is contextual. They discuss IT strategy in the context of the company’s strategic plans or debate the IT function’s structure in the context of organization-wide structure.

2. **Boards generally only receive post hoc updates on major IT issues.** They only get involved in discussions of, say, a large project implementation, when something goes badly and severely disrupts company performance.

3. **The limited discussions of IT issues generally occur only in board committees.** The audit committee, especially, discusses IT, but mainly from a risk perspective. To a lesser extent, the HR or compensation committees discuss CIO-related issues. But even in these committees, IT issues were considered to be of such low priority that they generally did not get onto the agenda.

4. **Audit committee IT discussions are reactive.** Their discussions center around risk, control, compliance, tracking competitors, and other backward-looking or current-status issues. IT discussions are rarely proactive or forward-looking, either in audit committees or full boards.

5. **Boards view IT issues as too “technical.”** IT is seen as just too complicated, too detailed, and too “low level” for the board. Mature members, especially, see themselves as “too old” to understand and grapple with IT issues.

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8 Many of the board chairs/members interviewed also sit on other boards, often in other industries. During our interviews, we asked their views on whether practices differed in these other companies. We heard very few instances of notable differences.
6. Boards are concerned most about IT risk. All the financial services boards were concerned with IT risk; only half the primary resource boards spent time on IT risks. In both industries, these board discussions occurred mainly in the audit committee.

THE CIO PERSPECTIVE

We wanted to know the opinion of each CIO in the 17 companies regarding what that CIO’s board ought to be doing with respect to IT.

IT Vision, Strategy, and Competitive Advantage

Perhaps not surprisingly, every CIO believed the board should be spending more time considering certain IT issues. CIOs were nearly unanimous that the board should periodically examine and review the IT vision, IT strategic plans, and alignment of the IT strategic plan with the overall organizational plan. Although one CIO did comment that the IT plan often gets technical so “it’s hard to establish a clear line of sight to corporate strategy. The most important thing is for the board to understand the linkages between the IT plan and the company’s strategic plan. The more the board understands about this, the better.”

Similarly, almost all the CIOs believed the board ought to spend more time considering IT investments, and how IT might provide competitive advantage for the organization. Quite uniformly in both industries, the CIOs wanted the board to give direction on how IT could provide greater value. One CIO went so far as to want his board to ask him how each component of the IT strategy provides competitive advantage. However, another CIO noted how difficult this role could be, saying, “While directors have lots of insight, knowledge and judgment which could broaden IT thinking, the challenge is for directors to bring that to bear on IT in an appropriate way when many board members are not IT literate”.

IT Leadership and IT Function Effectiveness

CIOs were split on the question of whether the board should be involved in either CIO hiring or career development. But nearly all the CIOs agreed that the board should be concerned about IT management performance, as measured by overall IT function effectiveness. In many organizations, IT management, and not the board, conducts benchmarking and other assessments. The board is only informed when significant problems are revealed. A characteristic CIO comment was, “IT management should be asked by the board to demonstrate that it is doing a good job in showing how IT is contributing to achieving corporate objectives.”

Board-level IT Governance

All but one CIO believed a board-level IT oversight committee was not necessary. Some believed there would be little benefit, saying, “Most board members aren’t sufficiently experienced or knowledgeable about IT to contribute effectively on an IT committee.” Others believed existing committees sufficed. Some even stated that there were already too many committees of the board. A committee focused on a single function, such as IT, was not appropriate. Perhaps these CIOs would appreciate a little more board attention, but not that much more.

The CIO of one major bank, though, had campaigned to have a board-level IT committee because he did not have enough opportunities to inform the board about IT. But his effort did not succeed. He still believes there is a need for dialogue with some component of the board.

IT Risk, Security, and Business Continuity

The CIOs uniformly believed that the board should consider IT risk exposure. However, they tempered this belief by cautioning that among the many categories of risks, the board should only be concerned with strategic risks that might affect business continuity. Business continuity appears to be of growing strategic concern.

Within the financial services sector, the integrity, reliability, security, and accuracy of company data receives special attention. These CIOs noted the legal responsibility for protecting data. As one stated, “There is a real legal liability for individual directors, as well as the entire company, should confidential financial data prove to be insecure.” In addition, the CIO of a major bank commented that while the board needs to be aware of the magnitude of any threat, IT risk has also become one of the most technical areas. “It would really challenge the board to deal with this successfully. It is best to just inform them of intrusions, viruses, etc., and the manner in which management is dealing with these threats.”

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Other Major IT Issues

Capital IT Investments. A majority of the CIOs in both sectors believe that the board should only make IT application decisions that are either large or have significant customer impact, that is, might generate competitive advantage. Otherwise, IT investment does not merit board attention. As one CIO put it, “In general, whether or not the board should be involved depends on whether such applications affect strategy or simply involve large sums of money.” However, a financial services CIO believed his board should not be involved in any major application decisions because they are not well enough informed. Board members often have strong opinions and when they are not well informed, they can make inappropriate decisions, he believed. He cited “frequent-flier university”9 as the source of most board members’ IT knowledge.

Structure of the IT Function and Oversight of Large IT Projects. The CIOs in both sectors agree with the prevailing practice that the structure of the IT function and oversight of large IT projects are not issues for the board. Those are management’s job. However, the CIOs did cite exceptions, such as a merger or acquisition or major outsourcing decision, especially in financial services. In one case, a board initially approved an outsourcing arrangement. Then, when conditions changed, the board approved buying out the outsourcing company to “regain control of our destiny.” “Given our high degree of reliance on IT, the board needed to be considering the IT functional structure,” said the CIO. “The issue was too risky to leave solely to the IT people.”

The CIOs also believe the board should be regularly updated on “strategically important” projects, even those of modest size that have broad impact. However, several CIOs believed the audit committee was the appropriate recipient of reports on individual projects because so many applications are tied to company financial controls.

We saw no evidence of CIOs promoting the IT function by attracting more board attention. Nor did we see concern of closer board oversight. Nonetheless, CIOs generally would welcome more oversight rather than less. As one primary resource CIO noted, “There is a positive side to the CIO having more face time with the board. Closer oversight by the board would help it better understand the IT function. This is particularly the case in our company because IT is now treated mainly as a large cost center.” And, as another CIO commented, IT drives so many processes in companies today that the board should be kept well informed and should show an active interest in IT.

In summary, Figure 2 compares board-level attention to IT compared to the CIOs’ preferences at the interviewed companies.

SIX WAYS TO REDUCE A BOARD’S IT ATTENTION DEFICIT

Our interviews suggest that CIOs see the board as having an attention deficit in the important, high-level IT issues of the IT vision, IT strategic plan, IT’s role in competitive advantage, oversight of large IT projects and overall effectiveness of the IT function. CIOs are comfortable with the minimal board attention to such lower-level issues as IT application portfolio, IT leadership, and IT project governance. Most even agree that there is no need for a formal board-level IT governance committee. In companies where IT plays a support role, such as in the primary resource industry, such attention deficits might be understandable. But in financial services, where, in the words of one CIO, the IT function “delivers strategies,” attention deficits are inappropriate, if not alarming.

We suggest six ways to reduce or eliminate such deficits. These actions apply particularly, although not exclusively, to companies strategically dependent on IT.

1. Include IT on the Board Agenda. The board chair sets the board agenda. Boards have scarce time and attention. To examine strategic IT issues, the chair must take time from other topics.

2. Invite the CIO to Board Meetings. For boards with IT in the strategic quadrant, the board chair should consider regularly inviting the CIO to the board meetings. CIO attendance provides the double benefit of providing the board with IT management expertise while keeping the CIO informed about “board thinking.” CIO attendance also provides board members with a real person to deal with regarding IT issues rather than a faceless department that may seem disconnected from the revenue-generating operations of the business.

3. Elicit Brief CIO Presentations. The chair should occasionally call on the CIO to brief the board on the business implications of relevant emerging technologies. Such briefings should play to board members’ strengths: their business acumen and

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9 “Frequent-flier university” refers to the phenomenon of senior executives reading about an IT concept or technology in an airplane in-flight magazine, then demanding of the CIO why their own company is not pursuing the concept.
**Figure 2. Board Attention to IT Issues versus CIO Preferences**

<table>
<thead>
<tr>
<th>Board attention to IT vision, strategic plan, and competitive advantage</th>
<th>Board Reality</th>
<th>CIO Preference</th>
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<tr>
<td>Little consideration given to IT vision or strategic issues by either primary resource boards or financial services boards; some consideration in broader organizational context. Board emphasis on company not falling behind competitors (as opposed to getting ahead of competitors).</td>
<td>Near unanimity that boards should spend more time on these issues.</td>
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</tbody>
</table>

| Board attention to IT leadership and effectiveness | Primary sector boards rarely concerned with career development for senior IT managers or critical IT-related performance issues; about half in financial services boards discussed these issues. | Financial sector CIOs believe boards should be concerned about career development; CIOs in both sectors believe board should be concerned with IT effectiveness. |

| Board IT governance mechanisms | IT committees of the board do not exist; board-level IT governance is through the Audit Committee, if at all. | Consensus that an IT committee of the board is not required. |

| Board attention to IT risk, security, and business continuance | All boards concerned with risk. Little interest by primary resource boards in security and business continuity; financial services boards concerned about business continuity. | Boards need to be more concerned about IT risk; financial services have special data-related risks. |

| Board interest in IT application decisions | No boards consider application decisions. | Boards should consider applications with strategic impact and large cost. |

| Board concern about IT functional structure | A management issue, not a board issue, even in mergers. | A management issue except in mergers or major outsourcing. |

| Board oversight for large IT projects | A management issue. Board seldom receives reports, even for large projects. | Board should receive regular updates of strategic or large projects. |

experience. Information sessions should not be expected to produce immediate results but rather to nurture confidence in raising and debating IT issues over time. We also suggest that board chairs annually schedule a brief CIO presentation on the current IT vision and IT strategic plan.

**4. Recruit IT Experience onto the Board.** A recent study found that only 15 of the top 500 global companies had a board member with an IT background. But in each case, following the appointment of those IT-savvy directors, those companies delivered annual returns 6.4% above their industry averages.10 “Strategic quadrant” boards should recruit at least one director with a strong IT background, ideally someone with senior IT responsibilities elsewhere. Such an appointee can become the board’s focal point for dealing with IT concerns. In fact, IT experience should be a desirable feature for all board appointees. In this study, IT experience was not a primary or even a “desirable” criterion.

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5. Get the Board Talking About IT. Few boards seem to want to talk about IT. Directors apparently believe they cannot contribute to an IT discussion because the issues are “too technical.” And, they don’t want to embarrass themselves in front of their colleagues.

However, outside forces are compelling boards to talk about IT governance. Sarbanes-Oxley legislation, in particular, requires boards to ensure the internal integrity of their information processes, or suffer regulatory consequences. IT is inextricably embedded in corporate financial controls. Boards have little option but to increase their attention to IT.

The CICA report notes that board members do not need to be computer wizards to either ask intelligent questions about IT or understand the answers. They can understand competitive use of IT, whether the use is cost cutting or revenue generating. Not discussing IT use means lost opportunities.

In seeking to explain the lack of attention by boards regarding IT, a financial services CIO commented that while he believes “there is a big difference in IT competence of senior IT managers in the financial services industry as compared with those in primary resource industries, there is likely very little difference in IT competence at the board level between these two industry groups.” He explained that senior management in financial services has high IT competence because IT constitutes a very high percentage of the corporate budget. But financial services boards are not at all proactive and only confirm direction. “IT scares them.” We conjecture that IT-savvy senior executives therefore provide a ‘comfort blanket’ for such boards. So the boards believe they do not need to deal with IT, even when it is critical to corporate success.

6. Realize That Boards Now Operate in an IT Era. Besides Sarbanes-Oxley, other factors such as consumer expectations, corporate diversification, globalization, as well as new opportunities and risks presented by IT, augur a new era for boards. Reactive and neglectful board approaches to IT will simply be untenable.

Board membership will likely change, but will the change be soon enough? Board membership seems to change quite a bit every five to 10 years as current directors move off due to age. Thus, the current situation in which many board members are disinclined to raise and tackle IT-related issues may change dramatically over the coming decade. The next generation of directors is likely to be more comfortable with technology. It would be better for today’s boards to be proactive, rather than reactive, but this study suggests they are not.

ABOUT THE AUTHORS

Sid L. Huff

Sid Huff (Sid.Huff@vuw.ac.nz) is Professor of Information Systems and Head of the School of Information Management at Victoria University of Wellington, New Zealand. His research focuses on electronic commerce, IS strategy, IT governance, and senior management roles in IT. He has published in both academic and practitioner journals, and has written over 50 teaching cases for educational use. He is the lead author of Cases in Electronic Commerce, the second edition of which was recently published by Irwin/McGraw-Hill. His most recent book, Managing IT Professionals in the Internet Age, co-authored with Dr. Pak Yoong, will appear in mid-2006. He holds degrees in Applied Mathematics, Electrical Engineering and in Business Administration, from Queens University. He received his Ph.D. in Information Systems from the M.I.T. Sloan School of Management.

P. Michael Maher

Mike Maher (maher@haskayne.ucalgary.ca) is Professor of Strategy and Global Management and former dean (23 years) of the Haskayne School of Business at the University of Calgary in Calgary, Canada. His primary research focuses on corporate governance. He has served as a chair and director of corporate, national, and international boards, and on high-profile public-sector boards and community associations. He holds a bachelor’s degree in chemical engineering from the University of Saskatchewan, and an MBA from University of Western Ontario. He received his PhD from Northwestern University. He also holds an honorary degree from St. Mary’s University, Halifax, Canada.

Malcolm C. Munro

Malcolm Munro (malcolm.munro@haskayne.ucalgary.ca) is Professor of Management Information Systems at the Haskayne School of Business at the University of Calgary. His research focuses on corporate governance with particular emphasis on board responsibility for information technology. He has published over fifty articles in major IS academic journals and leading professional publications. He earned a Bachelor of Commerce (Honours) degree in Marketing from the University of Saskatchewan and received the MSc. and Ph.D. degrees in MIS from the University of Minnesota.
APPENDIX A: GROSS REVENUE AND EMPLOYEES FOR THE FIRMS IN THIS STUDY

<table>
<thead>
<tr>
<th>Industry Sector</th>
<th>Company Business</th>
<th>Employees</th>
<th>Gross Revenue (Millions CDN)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Financial Services</td>
<td>National bank</td>
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<td>Oil and gas exploration</td>
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APPENDIX B: INTERVIEW METHOD

We began interviewing with an open-ended general question asking the board chair or member to recall the kinds of IT-related issues that had come to the attention of the board in the past year or two. More focused follow-up questions dealt with whether or not the board had ever discussed: the IT vision for the company, the IT strategic plan, major IT application decisions, IT leadership, IT functional structure, IT function effectiveness, and how the company’s IT applications are (or are not) providing competitive advantage. We also asked questions regarding IT risk and exposure. In general, our purpose was to gain an understanding of the nature and extent of board-level IT governance. The interview guide is shown in Appendix C.

The interview with the board chairs and members were followed by a separate, but similar, interview with the Chief Information Officer of the company (i.e., the company’s senior-most IT executive). In these interviews, we focused on the CIO’s opinions on what the board ought to be discussing. We were particularly interested in the extent to which the CIOs believed that IT was under-represented on the board agenda and, if so, what the CIOs thought the board should be doing regarding IT.

In developing the interview guide, we drew on the advisory entitled “20 Questions Directors Should Ask About IT” prepared by the Canadian Institute of Chartered Accountants’ Information Technology Advisory Committee. This guide is shown in Appendix D.

APPENDIX C: INTERVIEW GUIDE—BOARD CHAIR/MEMBER RESPONDENT

Name:

Company:

Date:

Preamble [Briefly discuss purpose, explain procedure, and discuss confidentiality.]

1. Opening general question

Thinking specifically about the Board of XXXXX company … what specific issues pertaining to information systems and technology (IT)—currently or in the recent past—have received Board attention?

(Expand on question if appropriate: we want to know what kinds of issues have come to the attention of the Board, i.e., come on to the Board’s “radar screen.” Has ‘computing’ been discussed at all, by the Board?)

Approximately what percentage of the full Board’s time is spent considering IT issues?

2. Follow-up questions regarding specific IT issues

a) IT Vision. Has the Board ever considered the “IT Vision” for the company (if any)? … i.e., where the company is ‘positioned’ with respect to IT? Where on the “wave” of IT—leading edge, etc.?

- Also: If an IT Vision exists, does the Board ever consider how well aligned it is with the corporate vision?

b) Corporate IT Governance. [Recently, Fedex, HP, and some other companies have established Board “IT Committees” to exercise specific governance/oversight of IT.] What vehicle does your Board use for exercising its IT governance/oversight role?

- Specifically, is there a Board “IT Committee”? If so, what is its role?

- Audit committee role?

c) IT Plan. Does the Board ever consider the Information Systems Strategic Plan for the organization?

- Does it concern itself about the alignment (or non-alignment) between the company’s strategic plan and its IT plan?

d) IT Application Portfolio. Does the Board ever consider IT application decisions (e.g., a decision to buy and implement an ERP system such as SAP or a decision to develop a large system in-house)?

- What is the Board’s role in this regard?

e) IT Leadership. Is the Board involved in hiring the CIO? Is it involved in developing the careers of the CIO or other top IT managers? [Succession planning?]

f) Competitive Advantage. Has the Board specifically discussed the ways in which the company’s IT applications are (or are not) providing competitive advantage to the company?

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12 These questions imply a highly structured discussion. But this was seldom, if ever, the case. The respondents are more accustomed to controlling the conversation, so this list of questions only served to ensure that we fully covered the issues.
g) **IT functional structure.** Is the Board concerned about the way in which the IS function is structured internally (e.g., centralized vs. decentralized)?

Is the Board concerned about outsourcing of IT components?

What about IT aspects of possible mergers or acquisitions?

h) **IT Project Governance.** Is the Board concerned about oversight at the level of individual IT projects (presumably, large projects with large budgets, e.g., an ERP implementation)?

i) **IT Function Effectiveness.** Is the Board concerned about operational effectiveness of the company’s IT function. This might include such things as level of IT spending, benefits achieved by IT applications, benchmarking the company’s IT performance against key competitors, etc?

j) **IT Risk/Exposure.** Is the Board concerned with issues involving risk and exposure related to IT (e.g., serious outages, virus infections, external shocks, etc)? [“business continuance”]

3. **Some other general questions**

   a) **IT Technical Support:** What IT tools and methods are used (if any) to support Board functioning (both full Board and Board committees)?

   - e.g., e-mail, Web, conferencing technologies…

   b) **Obtaining information about IT:** How does the Board obtain information regarding how IT is being used, how effectively IT function is being managed, etc.?

   c) **IT Knowledge on the Board:** What IT knowledge is present on the Board? Specifically, is a CIO or equivalent person from some other company a member of the Board? [By design, or happenstance?]

   d) **Respondent Attitude Towards IT:** What are your own personal attitudes toward IT? [If respondent is not Board Chair, ask what he/she thinks are the attitudes of the Board chair toward IT.)

   e) **Where do you see IT’s strategic relevance?:**

   Unimportant ………………………………… Strategically Critical

4. **Other observations**

Are there any other comments or observations you would like to share with us regarding IT at the Board level?

--- End of Primary Interview ---
## APPENDIX D: THE CANADIAN INSTITUTE OF CHARTERED ACCOUNTANTS’ “20 QUESTIONS DIRECTORS SHOULD ASK ABOUT IT”

<table>
<thead>
<tr>
<th>Topic</th>
<th>Questions</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Strategy and Planning</strong></td>
<td>1. Does management have a strategic information systems plan in place that is monitored and updated as required? Does this plan form the basis for the annual plans, annual and long-term budgets and the prioritization of IT projects?</td>
</tr>
<tr>
<td><strong>Technology Trends</strong></td>
<td>2. Have appropriate procedures been established to ensure that the organization is aware of technology trends, periodically assessing them and taking them into consideration when determining how it can better position itself?</td>
</tr>
</tbody>
</table>
| **Performance**              | 3. Have key performance indicators and drivers of the IT department been determined? Are they monitored from time to time, and are they benchmarked against industry standards?  
4. How is the organization managing its relationships with third-party service providers? |
| **Personnel**                | 5. Does management have appropriate procedures to address IT employee turnover, training, and project assignment?  
6. How has management ensured that it has identified the required technology expertise, and how is top talent attracted and retained? |
| **Governance**               | 7. Has the board considered the creation of an IT subcommittee or assigned a board member specific responsibility for the organization’s investment in, and use of, information technology?  
8. Who on the management team has responsibility for IT corporate governance?  
9. What is management doing to ensure that employees are aware of, and are in compliance with, the company’s information and security policies? |
| **Risk and Security**        | 10. Does management have a plan to periodically conduct IT risk assessments?  
11. How does management ensure data integrity, including relevance, completeness, accuracy, and timeliness, and its appropriate use within the organization?  
12. What arrangements does the organization have for the regular review and audit of its systems to ensure risks are sufficiently mitigated and controls are in place to support the major processes of the business? |
| **Personal Information Privacy** | 13. Has the organization assigned someone the responsibility for privacy policy and privacy legislation in compliance therewith?  
14. Has the organization identified the various legislative and regulatory requirements for protecting personal information and developed a policy and procedures for monitoring compliance with them? |
| **E-Business**               | 15. If the organization uses e-business to buy or sell products or services, has there been a specific review of the risks and controls over these activities?  
16. Are the organization’s e-business activities appropriately protected from external attacks by hackers or others that, if successful, would result in loss of customer satisfaction or public embarrassment? |
| **Availability**             | 17. Has the organization adopted formal availability policies? Has it implemented effective controls to provide reasonable assurance that systems and data are available in conformity with availability policies?  
18. Does the organization understand the impact of an interruption in service and are there plans in place to deal with potential interruptions? Has a business continuity plan been adopted? If it has been adopted, is it tested regularly and are the results used to improve the plan? |
| **Legal Issues**             | 19. Has management considered and addressed legal implications that pertain to the use of software, hardware, service agreements, and copyright laws?  
20. Have policies covering licenses, agreements, and copyright been formulated and disseminated to all personnel? |

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13 We drew on the above topics and questions to structure both the board chair and CIO interviews. Reproduced from “20 Questions Directors Should Ask About IT” with the permission of the Canadian Institute of Chartered Accountants.