

IT Portfolio Management

Challenges and Best Practices

Objective

How can executives measure, control and increase the value IT brings to the business? How can they take the initiative in aligning IT investments with business strategy? What concrete actions will successfully address increasing budget pressure, skepticism and higher expectations regarding IT performance and accountability?

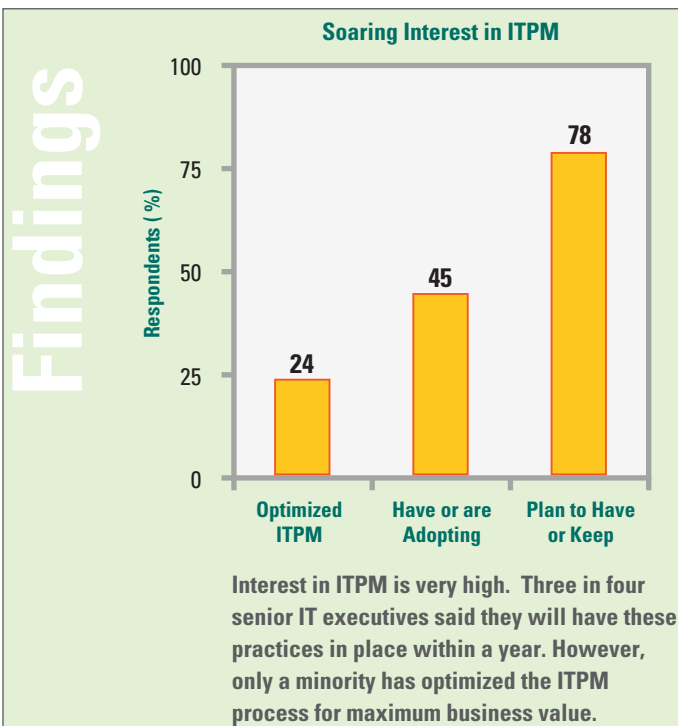
According to the trade press and industry analysts, IT portfolio management (ITPM) holds the answer – a set of techniques and practices aimed at managing IT assets as a portfolio of investments. Interest appears at its zenith, it seems that almost every IT conference and trade journal is discussing portfolio management. But to find out whether reality matches hype, the Kellogg School of Management and DiamondCluster International surveyed and spoke with senior IT executives to hear their experiences firsthand. In collaboration with the Society for Information Management (SIM), Kellogg and DiamondCluster surveyed 130 senior IT executives, 90 percent of whom are CIOs.

The objective of the research is to help organizations make better IT investment decisions. The research provides insights, and reveals best practices, into how to successfully adopt ITPM.

Executive Summary

There's a clear dichotomy between thought and action among senior IT executives when it comes to applying Portfolio Management techniques and practices.

Respondents demonstrated strong awareness about ITPM (89 percent), and 65 percent believe those concepts will yield significant value. Despite this high awareness and conviction, however, very few organizations appear to be maximizing the value that can be obtained from IT portfolio management.



Research directors Ingmar Leliveld, Principal at DiamondCluster International, and Mark Jeffery, Assistant Professor of Technology at the Kellogg School of Management, would like to thank Snooky Tiedje at DiamondCluster and Scott Abbott, Robin Barnes and Sandeep Shah at The Kellogg School for their contributions.

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Survey findings reveal this gap in stark relief:

- 41 percent do not have a centrally overseen IT budget.
- 46 percent of respondents do not have applications and infrastructure well documented.
- 47 percent do not track projects centrally.
- 57 percent do not have criteria to define project success.
- 68 percent do not track project benefits.
- 81 percent never consider a project's option value.
- 89 percent do not use earned value to track project success.

The key question, of course, is why? What has been holding back adoption of techniques and practices a vast majority of IT executives say they believe in so strongly? The answer, in short, is that adopting these practices means changing people's skills, attitudes and behaviors. Putting a fancy framework on a slide, presenting metrics on a spreadsheet or simply implementing a portfolio management tool won't accomplish that.

The research identified and prioritized specific barriers that have hampered many implementation efforts. In summary, the key to making ITPM work in practice is to tear down these barriers by following a phased adoption path. An example of such a path is described in more detail further into this paper. "Phased" should not be read as "slower." On the contrary, it enables organizations to drastically speed up adoption of new capabilities – by focusing on the right sequence of steps and addressing anticipated hurdles before they arise.

The payoffs, as the study results show, can be significant. Beyond the ability to measure, control and increase the return on IT investments, successful practitioners have earned respect and recognition as fellow business leaders in the boardroom.

A strategic role for IT requires ownership and conviction on the part of the CEO and senior line executives. Without their commitment and involvement IT will likely remain a cost center – a more transparent one perhaps. In that context, ITPM offers CIOs a fresh opportunity to take initiative in bridging the gap and become business leaders themselves.

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research

About the Sponsoring Organizations



The Kellogg School of Management at Northwestern University was founded in 1908 and is widely recognized as a global leader in graduate business education, drawing MBA students from more than 50 countries on six continents. In 2002, *Business Week* magazine ranked the Kellogg School the number one graduate school of business in the United States, an honor it has achieved four times since the biennial survey began in 1988. In October 2002, the school also was named the top MBA program in the world by *The Economist Intelligence Unit*, a division of *The Economist Group*. To learn more visit www.kellogg.northwestern.edu.



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Established in 1968, the Society for Information Management (SIM) is the premier network for IT leaders comprised of nearly 3,000 members, including CIOs, senior IT executives, prominent academicians, consultants, and other IT leaders. SIM is a community of thought leaders who share experiences, rich intellectual capital, and who explore future IT direction. In partnership with its 28 chapters, SIM provides resources and programs inspired by IT leaders for IT leaders that enable CIOs to further develop leadership capabilities of themselves and the key and emerging leaders in their organizations. SIM provides the collective voice to advocate policy and legislation on behalf of the IT profession across industries. To learn more visit www.simnet.org.

Detailed Findings

The Case for Transparency

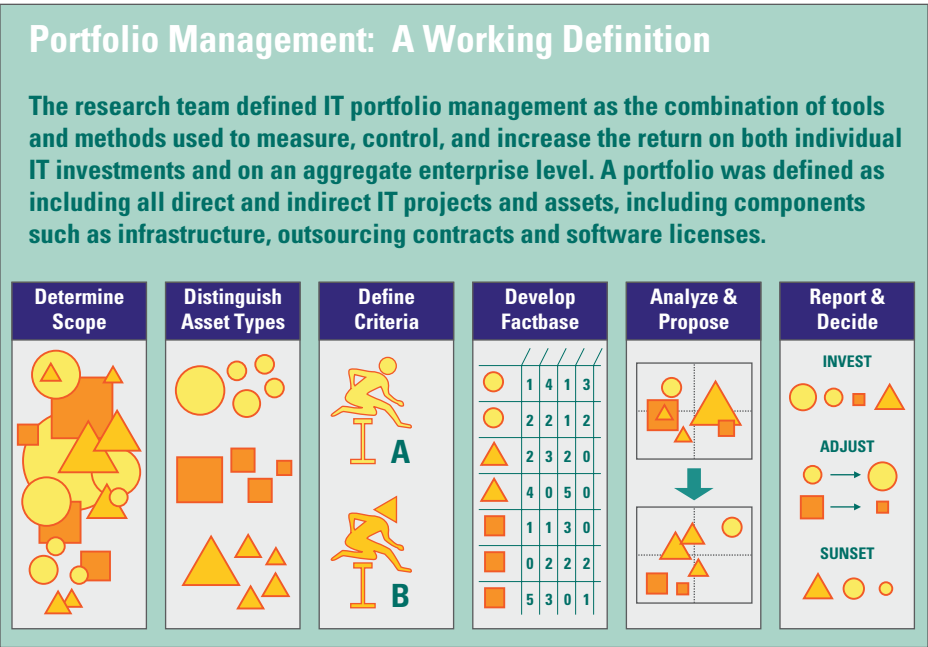
“The biggest value was an organized process that both the business people who ask for the work and the IT people who build to the business requirements understand.”

*- Richard Shellito, Systems VP,
State Farm Insurance*

IT portfolio management is not a new concept. In fact, the first in-depth treatise on the topic was written as early as 1981.¹ As a result of early research, the U.S. Government in the mid-1990s signed into law the adoption of portfolio management techniques and practices among federal investment decision makers.² So what explains the soaring interest in IT portfolio management over the past two years? Four factors stand out:

- **Tighter Budgets.** Uncertainty about the timing of an economic turnaround and instability on a global scale are forcing organizations to cut more costs and delay or defer investment decisions. Amidst increased spending scrutiny and fiercer competition for cash, few investment proposals stand a chance without a solid business case.

- **Investor Skepticism.** Following the technology investment boom and bust, and the dismay over lack of corporate governance, investors have less patience and demand greater transparency than ever before regarding how spending ties to results.
- **Poor Track Record.** Major ERP and CRM project disappointments have contributed to the skeptical attitude mentioned above. The Standish Group reports that 68 percent of large IT projects are not on time, on budget, and do not deliver the anticipated business benefits. A Morgan Stanley research report recently estimated that U.S. companies spent as much as \$130 billion on failed IT projects over the past two years. Several recent research studies suggest that on average investing in information technology contributes significantly to productivity. However, for specific firms, the wide variability in the returns on information technology spending continues to increase management skepticism.³
- **Higher Expectations.** CEOs and CFOs have higher expectations regarding CIO business skills and accountability than ten or even five years ago. Recently, Merrill Lynch made headlines by selecting a new CIO from its business ranks rather than hiring or appointing an IT specialist.⁴



These factors have fed a growing interest in the topics of portfolios and ROI, spurred on by weekly news coverage in the information technology media and analyses from IT industry analysts. Many senior IT executives,

“Our portfolio management approach has been instrumental in helping us cut costs by 40% in the last two years and increase productivity. We have developed strong application development and project management skills. We are training other parts of the organization in project management techniques. There is recognition in the company of our performance capabilities and it’s unusual compared to what I hear from fellow CIOs and other experiences I’ve had.”

- Lynne Ellyn, SVP & CIO, DTE Energy

as well as other business executives, are picking up on ITPM techniques to better diagnose and control the value of IT, make more well-informed investment decisions and forge a stronger link between business strategy and IT.

In our research 89 percent of the respondents reported that they were aware of IT portfolio management concepts and practices. Sixty-five percent agreed with the statement “application of ITPM concepts will yield significant tangible and intangible benefits.” Among those who were less enthusiastic, 20 percent were neutral on the subject, while 15 percent disagreed.

Open-ended questioning revealed the kinds of value ITPM practitioners saw in their efforts. The VP of IS for a major consumer products

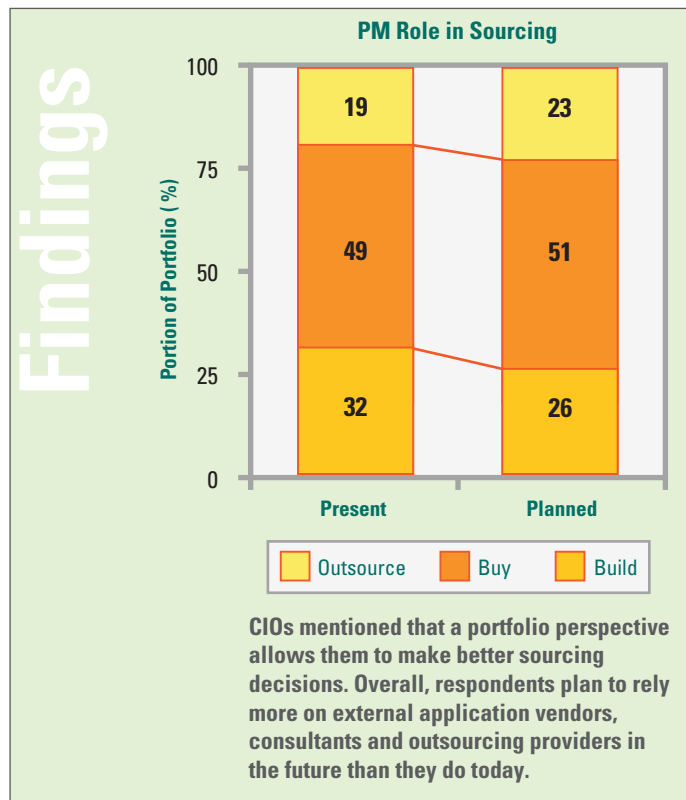
company, for example, said: “Adopting a portfolio approach improved our dialogue with the executive team tremendously. It has brought logic and structure to the process and taken emotion out of spending decisions. It has put trust back into the relationship.”

A transportation services CIO echoed those remarks. “Using a portfolio framework provided metrics and checkpoints that make anything ‘suspect’ instantly visible. We can now go to our CEO and look at our projects in the same way a pharmaceutical company looks at its pipeline of new products.”

Beyond benefits from greater insight in and control over the value created by IT investments, respondents pointed to greater respect from board members and other business executives. ITPM techniques have provided these CIOs with the language to successfully bridge the chasm which has been obstructing IT/business alignment for decades.

There is some irony to the “IT/business alignment” topic in the sense that it has been more an IT agenda item than a business one – if it ever was. The study shows that ITPM can change this imbalance. It has helped lift the black box off IT organizations. For indications and proof of such change, look for business leaders seeking CIO input in business decisions rather than IT decisions.

As Laura Scott, VP & CIO at Carpenter Technology, illustrated: “Without portfolio management, I wouldn’t have been able to communicate to senior management the lack of value we get for the money we invest in our systems. Because we have such complexity in our application and infrastructure portfolios, pumping more money into them would never provide a great return. The portfolio perspective helps people understand what we have and why we need to change.”



The Current State of IT Portfolio Management

"The idea that the whole IT infrastructure is just a burgeoning, unmanageable, out of control cost area is simply not true. You can manage it. That's one of the big benefits of portfolio management, because it allows you to regain control, ensure alignment with strategy and then make smart day-to-day decisions towards identified objectives."

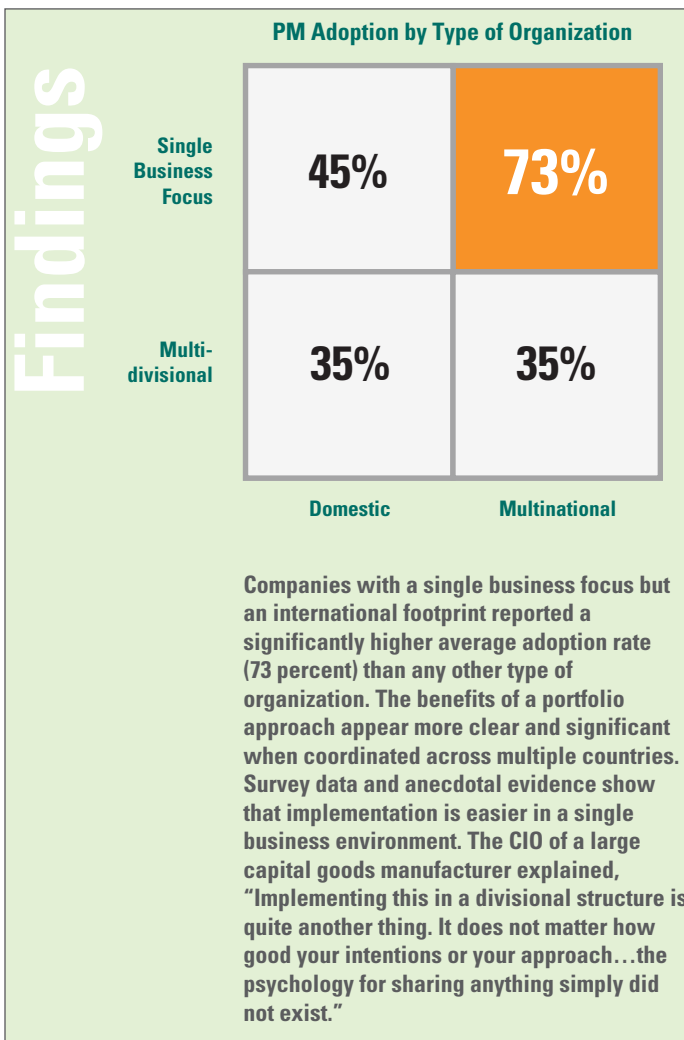
**- David Faith, SVP, Enterprise Group,
The Scoular Company**

The conundrum of portfolio management is clearly evident when comparing the aspirations of senior IT executives with the reality of their current state.

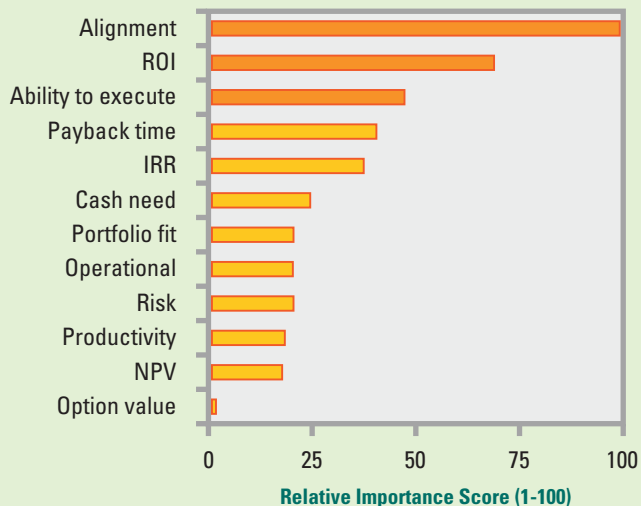
The disparity between ultimate goals and actual progress does not suggest that IT executives are to blame.

These executives are committed to making IT more transparent to the rest of the organization. They are savvy about the need to speak the language of finance and strategy. And they are willing to go the extra mile to ensure that the IT department is a full partner in supporting business goals. However, they are also struggling to make portfolio management work in their organizations.

- 51 percent have no process to align and evaluate IT investments with business strategy but 74 percent want such a process.
- Only 26 percent said they track actual financial metrics after making an investment decision but 63 percent want to do so.
- 68 percent do not track the benefits of IT investments and compare them to original targets. 70 percent want to.
- While 81 percent are interested in applying a predetermined method to screen and prioritize IT investments, 42 percent do not do so today.
- 42 percent said a lack of working knowledge of financial concepts among IT staff precludes IT portfolio management.

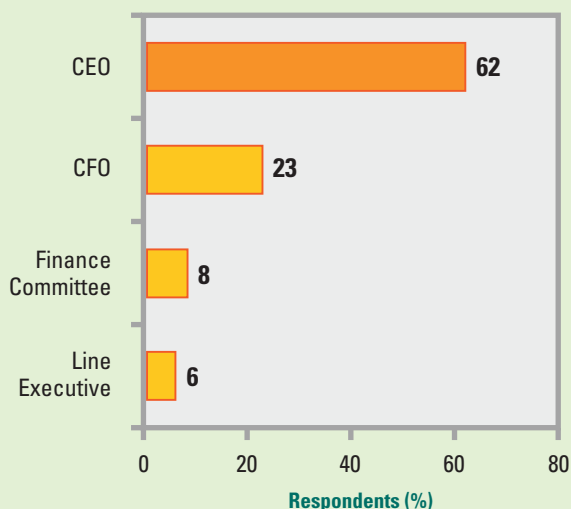


Investment Approval Factors



The chart above shows the weight of IT investment decision-making factors, relative to the one ranked number one (alignment with business objectives).

Investment Proposal Decision-Makers



A majority of respondents (62 percent) say their CEO ultimately signs off on IT investment proposals. Most organizations have a threshold amount at or after which formal project sign-off is required. Specific reported thresholds vary widely from as low as \$5,000 to as high as \$5 million per project. The average threshold is \$354,000, while the median is \$100,000.

One CIO said about the impact of ITPM: "It has allowed us to step outside the boundaries of traditional budget constraints. When we can talk the language of a CFO with a proposal that says here's a 25% internal rate of return, regardless of what your budget is, it's hard to find a business person to say they don't want to fund that."

Slicing the IT Portfolio

The rise in interest in the portfolio topic has produced a number of advocates for specific frameworks or methods with which to segment an IT portfolio. The study results support the overall importance of investment segmentation but do not point to any specific framework as generally more effective. The key takeaway is that not all investments ought to be evaluated along the same criteria. It may not make sense to set financial return targets for a network security application, but rather measure its performance operationally, in terms of percentage of intrusions identified and blocked.

57 percent of respondents say they apply some type of project classification when it comes to allocating budget. The largest group among these respondents segments and reviews proposals in terms of their business purpose. Common categories are profit improvement, cost savings, infrastructure support and applications for specific business objectives. One CIO described how state level regulatory requirements for his industry have implications for IT. Nearly all respondents in this group used a portfolio category called "Mandatory." A smaller group evaluates projects separately by functional area, such as sales, manufacturing or customer service.

The survey data did not point to any prevailing portfolio breakdown or categorization method by industry. Balancing an IT portfolio appears primarily a company-specific function, driven by strategies pursued or age of assets.

Why Implementation Hasn't Happened

"The biggest barrier (to managing the IT portfolio) is educating the IT staff on building a business case justification for making changes, versus just wanting to please the client."

**- Laura Scott, VP & CIO,
Carpenter Technology**

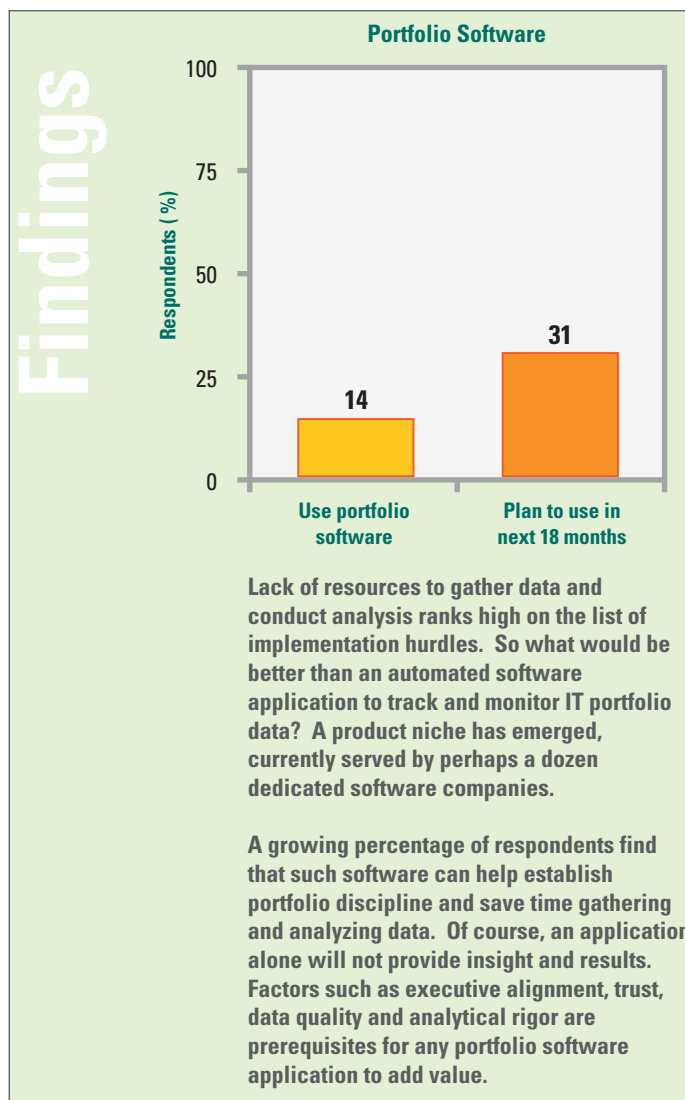
The most revealing insight from the study is that despite all the awareness and interest very few organizations appear to be maximizing the value that can be obtained from IT portfolio management. What's holding them back? Survey respondents point to a number of specific challenges:

- 82% of respondents say that estimating IT benefits is a major challenge.
- 46% say they don't have the right metrics with which to measure value.
- 46% say business leaders don't understand that not all IT spending has to show an ROI.

- 46% say IT staff lack sufficient working knowledge of financial concepts.
- 37% say staff turnover is a major issue for implementation.
- 36% say lack of mutual respect and understanding makes business executives misuse ITPM to generate reasons for not spending on IT.
- 33% say they never established baselines to quantify impact and results
- 30% say business and strategy decision-makers lack good knowledge of IT.
- 30% say IT project scope changes too often to practically track financial benefits.
- 28% say their senior business executives view IT as a "necessary evil."
- 28% say they lack staff and resources to gather and analyze data.
- 18% say their organization will not provide relevant training to IT staff.
- 13% say their past investments lack known objectives to base evaluation on.

Other reasons mentioned:

- "Turf wars between units and divisions."
- "Lack of priority – we have a major ERP implementation underway."
- "Lack of project management skills."
- "Analyzing benefits seen as an 'overhead' activity."
- "Lack of long-term vision."
- "General belief that this is just another fad."



Interviews with respondents provided deeper insight into these challenges and what they mean in practical terms.

The **financial skill gap** is really about the ability to apply metrics and interpret data. Certainly, most IT staff can tell what NPV stands for and what the formula looks like. But that's different from being able to judge the validity of the data, the methodical soundness of a business case or perform the right sensitivity analyses to test underlying assumptions. The survey suggests that lack of financial skills is an important issue. While 74 percent of respondents calculate ROIs, 46 percent agree that overall their IT staff lacks sufficient working knowledge of financial concepts.

Says one respondent, the CIO of a global services firm: "The problem with doing any kind of ROI analysis is that it's just really hard to do. What I see in my field is that vendors and IT directors come up with these mythical ROIs and it's the wrong analysis. I've seen this argument for implementing the perfect anti-spam technology, but fact is that if we leave

spam where it is we won't lose revenues or increase expenses."

Successful ITPM adopters point to ways organizations can address the financial skill issue. First, make them a formal part of a training curriculum, treat them the same way as, say, Java certifications. This is especially important in order to establish standards around valuation practices. Second, involve the company's financial staff from day one. Make sure to incorporate quality controls into your methodology. Involve business counterparts to ensure the data is right. Third, build your own champions.

Regarding skills, a third of respondents noted **lack of IT knowledge** on the part of strategy decision makers as a hurdle towards adopting ITPM. Yet those IT executives who overcame this lack of IT knowledge started by treating the problem as an equal responsibility of the IT organization.

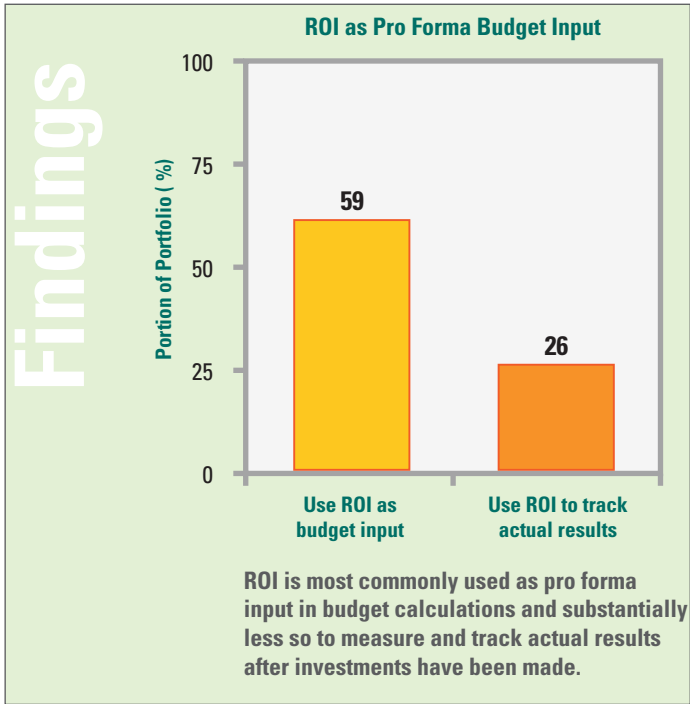
As David Faith, SVP Enterprise Group at the Scoular Company explained: "Three years ago there was no IT representation in senior

management. Management would meet with IT and do their best to articulate a business need or technology requirement. We'd take notes, build a solution and there would be a real disconnect. Now, all of our key meetings involve senior business officers and, in return, we are at the table when strategy is planned and discussed. Instead of being reactive, we have a real-time, heads-up dialogue about the role of technology. Our portfolio management implementation is the result of us being in the loop. We couldn't have succeeded had we tried it the other way around."

Another CIO added, "The business side did not realize how critical their involvement was. They were so used to giving us rough ideas and we would use our imagination as to what they think we want. Our attitude was very similar. The 'call me if you have a problem' kind of thing. The challenge was to break through this behavioral traffic jam. Two things made a difference. First, senior leadership realized there was a need for a champion. Someone to step up and get right down to the nitty gritty. Second, we realized that both the IT and business people would gradually come around to this."

Over a fourth of respondents pointed to **lack of resources** and continuity as barriers. The CIO of a leading professional services firm explains: "We want to move the ball ahead, but we are very cost focused. Resources are scarce. I think that's the biggest hurdle. You've got to decide whether to use them to better analyze the existing environment or to go out and implement new projects."

When available resources are constrained, IT leaders can often still control scope and time. Establishing smaller scope and a more phased timeline with clear milestones should help to keep implementation momentum up. In addition, lack of resources can be a result of not being focused enough. There is also an element of passion and personal championship. Who is driving the implementation effort? Who is aware of it? Is



the CFO on board and in a position to have finance resources help and train IT staff?

Several respondents mentioned **culture and beliefs**. In truth, effective adoption of ITPM practices means changing the way people do their jobs, the way they perceive those of others and even how they perceive themselves. Says one CIO, “My biggest challenge was at the lower levels, both from IT people as well as the business users. IT people will just do whatever the users ask them to do and then they’ll complain about it.

Business users all own some piece of the pie but only care about their own slice. Neither group sees the big picture. They don’t get or care for a portfolio view. One of the things I’ve done to get them over the hurdle is instituting a governance council right under senior management. This gave everyone visibility into what I was doing and why.”

The CIO of an energy company adds, “In some cases, **turf battles** froze initiatives to a standstill.” ITPM champions have to recognize that what is in the interest of a specific

function or division may not be the best solution for the company as a whole. By its very nature, ITPM risks being viewed as a “corporate” project by the troops in the field. “A gimmick,” as one CIO says. And greater transparency is not always welcomed by all colleagues. “We ran into a strong desire to keep costs under the radar screen. You had people doing IT projects that were stuck into all kinds of different budgets. So the company always had this perception that we were a really low spender in IT just because it wasn’t visible.” Such situations are especially common when budgets are not zero-based but carried forward plus or minus a percentage. Or when historically, as one CIO says, “Each of the business units would manage their own IT budget. They saw us as taking away their flexibility, their independence, their freedom. A big concern for them. It took four years to change.”

The CIO of a regional bank notes that 80 percent of the fight consists of political battles. “That’s the first stone wall I run into. If you use portfolio management to roll up things at the top, it becomes fairly provincial. You can start that way, but only as long as you know you have to involve the separate businesses. Show them you care about their personal issues and then ask what’s best for the overall company. Once you get a willingness and maybe even comfort to say, ‘hey, I’m a contributor, I’m a player,’ then you can move much faster with implementing portfolio capabilities.”

Portfolio Management Capability		HAVE %	PLAN %	GAP
1	Track benefits after investments have been made	25	65	40
2	Manage projects and assets as a portfolio	42	78	36
3	Define and document IT projects and assets	55	90	35
4	Have success criteria to evaluate projects	45	79	34
5	Use investment results to improve decision-making	54	85	31
6	Centrally track key project and asset information	48	79	31
7	Have methods to evaluate investment proposals	53	82	29
8	Process to evaluate business objectives alignment	47	75	28
9	IT requirements part of strategic planning process	48	74	26
10	Weighted score to rank IT projects	23	49	26
11	Measure value through full project lifecycle	25	50	25
12	Centralized PMO to coordinate IT projects	55	76	21
13	Process to roll up IT spending into central budget	57	74	17
14	Automated software to monitor IT portfolio	14	31	17
15	Use Earned Value as project metric	11	22	11

Portfolio management capability wish list. The survey asked respondents to what extent they had certain capabilities in place as well as their plans for implementing them. The list shows the capability areas with the largest discrepancies between present and planned adoption.

A Phased Approach to Implementation

"First, (IT portfolio management) instills the discipline of making sure that we are investing in those projects that are floated by the needs of the business and create a tangible return as evidenced by the business case that has to be developed. At a later stage, that discipline then leads to not just evaluating projects on the front end, but then comparing what the actual performance is on the back end to make sure we're actually achieving what we set out to do."

**- John Boushy, SVP,
Harrah's Entertainment**

The primary conclusion drawn from discussions about implementation hurdles is that successfully applying portfolio management principles is not a matter of a "big-bang" initiative.

Three Stages of Sophistication

Most telling was a consistent message that adding the structure and logic of ITPM to IT investment decision-making needed to be an iterative process. Obviously, there is no cookie-cutter formula to follow. And each organization has a different starting point based on its specific culture and mix of capabilities. The spectrum of ITPM sophistication can be divided approximately into three broad categories: defined, managed, and optimized. For each survey respondent we calculated a weighted score by summing positive responses to all of the major components of the ITPM process across this spectrum. Since the score is a weighted average across the spectrum, respondents in the "defined" and "managed" category may exhibit some "optimized" characteristics. However, firms in the "defined" and "managed" categories did on average have the following major characteristics:

Stage One: Defined

Companies at this stage have defined and documented the key components of the enterprise IT portfolio and have high-level estimates of costs and benefits of each element. The IT department has standardized methods for developing and prioritizing investment proposals, has central budget oversight and most likely a central project management office. Pertinent IT personnel have a basic understanding of financial metrics that help make investment decisions. In other words, the portfolio has been defined in terms of having an initial factbase as the basis for making decisions. Key missing components at this point are established links into budgeting cycles and feedback loops to assess actual returns.

Stage Two: Managed

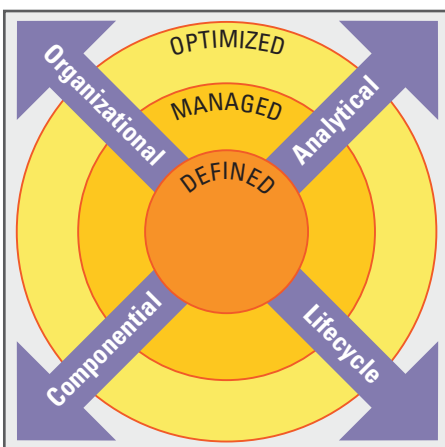
These companies have implemented periodic portfolio reviews with quantified investment feedback. As a result, they apply greater discipline to and exercise greater control over the IT investment decision making process than organizations at the defined stage. Project data is codified and logged in a central database. New IT initiatives are screened, categorized and prioritized within a portfolio context, not on a project-by-project basis alone. Most important, the data exists to compare current performance against projections and historical baselines. Financial metrics such as return on investment and net present value are consistently calculated. They are used in regular reviews with business leaders to align IT spending with business strategy.

Stage Three: Optimized

The most savvy IT management teams distinguish themselves by their ability to balance and optimize the IT portfolio and track earned value through the full lifecycle of each project or asset. They also take into account option value and measure both project and portfolio risk to maximize the aggregate value of their IT investments. In addition, these companies are disciplined in getting feedback from business unit heads to ensure IT efforts stay aligned with the company's strategy – after investment decisions have been made – and adjust course when necessary.

One CIO, whose ITPM capabilities are at the optimized stage, emphasized the business value of ITPM: "Portfolio management can be a very good thing. Once you start to think in those terms you can start to apply it to the whole process of delivering value. So you can start to look at the equipment as a portfolio, for example, and that might as in our case lead you to server consolidations that have high economic value. Or as in our case you might start to look at the talent pools as a portfolio of talent and start to manage that cross-functionally and holistically. So if you take the larger concept and you start to apply

Four Dimensions of ITPM Sophistication



The research revealed three stages of ITPM sophistication. The scope of an ITPM effort can be controlled along four key dimensions: project stages lifecycle, portfolio components, organizational units/functions and types of analytical frameworks.

it to the way that you manage all of IT, then you can start to get significant results and synergies.”

Portfolio Scope: Four Dimensions

The three stages of ITPM sophistication are approximations based on the survey responses and personal experiences shared in interviews. As one would expect, few companies fit perfectly in either of the three stages. A typical organization combined elements from two or three stages, but nevertheless has one stage it primarily resembles.

One can look at the three stages as target outcomes or target capabilities. But how does one actually get from one stage to the next? What does a “phased adoption” mean in practical terms? Follow-up interviews with respondents at different stages of ITPM sophistication pointed at four dimensions to help scope the portfolio and devise a capability implementation roadmap. The overarching best practice is to focus, get early wins to build trust, and only then upgrade to the next stage.

- **Organization.** What parts of the organization should be included in portfolio analysis? Successful practitioners focused on specific areas (or budgets) rather than taking on the entire company: enterprise projects, individual divisions or business units, or budgets within the IT function itself. Making ITPM work in one unit or function helps win over skeptics and overcome inevitable turf wars.
- **Components.** What types of assets should be part of the portfolio and at which stage? Most ITPM practitioners seem to have started with projects and later added components such as infrastructure assets, applications and even data itself. Says one senior IT executive: “From a portfolio management perspective, we include our infrastructure,

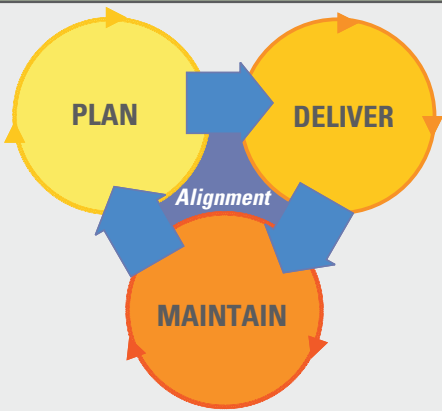
our people, our systems, and our approach to the way we manage our methodologies, and the way we run our department.”

Some respondents specifically look at skills and certification from an enterprise portfolio angle. Such a view can help make more informed decisions regarding hiring, training and use of external consultants or outsourcing services providers.

- **Analytics.** What are the right metrics with which to evaluate a portfolio? Any IT asset or project can be measured along a variety of metrics, such as service levels, financial returns, utilization rates, and total cost of ownership. A key metric is risk. Successful practitioners are specific about what to measure and why and limit their analytical scope to a handful of key metrics. The following dimensions should be considered when selecting ITPM metrics:
Relevance – measure what needs to be known.
Mutual exclusivity – avoid analytical redundancy.
Direction – avoid false accuracy.
Transferability – ensure metrics are intuitive and easily understood.
Replicability – tie metrics to readily available data.
- **Lifecycle.** What to measure at which point in an asset’s lifecycle? As discussed previously, a key feature of a well-managed IT portfolio is having distinct metrics for different types of investments. But even within investment classes projects go through different stages and should be evaluated accordingly. The sidebar on Lifecycle Perspective provides an overview of this dimension.

A Lifecycle Perspective on Portfolio Value

Only one out of four respondents measures IT value through the full lifecycle of a major project yet it ranks high on the list of most sought after portfolio capabilities. The figure below shows the three main stages of a project: plan, deliver and maintain.



In portfolio context, taking on such a perspective matters for three reasons:

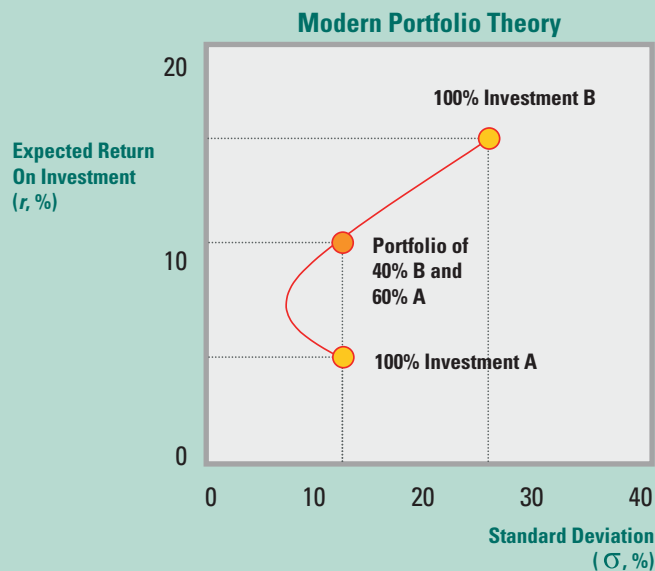
- First, interviews showed that several successful ITPM practitioners followed the different stages of the lifecycle to phase capability adoption. Says one respondent, vice president of Information System at a consumer goods company: “We started portfolio analysis by looking at new projects only. Next year we want to include existing ones as well.”
- Second, success metrics should change from one phase to the next. The Plan phase often focuses on NPV and ability to execute, the Deliver phase could track earned value and alignment with changed business goals, whereas Maintain may look at employee productivity.
- Third, CIOs should be able to analyze the balance and success of a portfolio as an aggregation of projects across different stages. Do projects systematically get bogged down during delivery? Do maintenance costs show a trend of creeping up on a per unit basis?

Portfolio Management History

IT portfolio management has its roots in both financial and corporate portfolio theory. Though it borrows many of the key concepts of both, there are also ways in which managing an IT portfolio is fundamentally different.

Financial Portfolio Management

Modern Portfolio theory was first articulated by Markowitz in 1952.⁵ The primary concept was how an investment decision-maker can lower risk for an expected return by creating a portfolio of diverse assets. Risk, or the uncertainty surrounding the expectation that a future cash flow will occur, measured as standard deviation, helps assess the attractiveness of an individual investment. Diversification evens out this project or asset-specific risk. What is left is the risk of the portfolio itself. An *efficient portfolio* maximizes aggregate expected return for a given standard deviation.



The analogy for IT is limited for four main reasons:

1. Financial portfolio theory exclusively looks at financial returns. In an IT environment, operational and regulatory demands often overrule return on investment (though consequences of noncompliance could be expressed as a negative impact on returns).
2. In finance the maximum risk is to lose the initial investment (save for shorting and certain derivatives) and limited to a particular asset. In IT, a failed project or neglected maintenance can have severe implications for ongoing business operations.
3. In finance the goals of assets are largely interchangeable. IT projects serve specific operational goals.
4. Financial portfolios consist mostly of liquid, securitized assets. IT projects and infrastructure can't be traded easily (if at all), have little to no salvage value, and often carry significant exit costs.

Corporate Portfolio Management

In the late 1960s, the concept of corporate portfolio management became popular. Several frameworks were proposed to enable executives to better allocate resources within the organization. As an example, the growth share matrix plots market shares (relative to the largest competitor) of the businesses components relative to their respective growth rates. This portfolio view enables management decisions: products or business units that are losing market share and cash should be eliminated, and income from the cash-generating products or units should be transferred to high-growth market opportunities.

Here, the analogy for IT works better. Too often, resource allocation decisions are made on a project-by-project or departmental budget-by-budget basis, rather than looking at what is in the best interest of the firm overall. In addition, it forces discipline to identify cash-needy projects or assets that produce little to no value.

Lessons Learned

“We spent a year conducting a portfolio analysis. Once done, we created a detailed report, put it in a nice envelope and sent it to our senior business managers. I expected us to get recognized for being proactive. But nothing happened. Nobody read the report. We drew an important lesson not to forget about the people part.”

- CIO, transportation company

Implementing ITPM presents a unique set of challenges but successful CIOs have learned some valuable lessons about what it takes to get the job done. They have served as leaders, driving the effort to bridge the gap in understanding between the IT department and the rest of the organization. They have bolstered the financial skills of the IT department in creative ways. And they have managed to deliver quantifiable benefits early in the ITPM process, thereby motivating the rest of the organization to provide long-term support. The following is a summary of the lessons CIOs shared during our research:

Bridge the business-technology divide

1. Take initiative. Though ITPM ought to be a joint responsibility, the initial burden of proof is on the IT organization. Because creating a portfolio view requires an enterprise perspective, initiative has to come from the center – the CIO, with visible support from the CEO and CFO.

2. Involve senior business audiences early. Business leaders are often unaware that their involvement is critically important to the success of IT initiatives. Build early consensus around ITPM scope, objectives, metrics and expectations.

3. Think business outcomes. ITPM provides a common business language that IT executives can use to communicate with other business leaders. Focus ITPM on benefits to the business, such as reducing inventory turns or customer retention, instead of traditional measures of IT department performance.

Develop and prepare people

4. Enhance IT Staff Financial Skills. CIOs who found that their IT staff lacked a working knowledge of ITPM financial concepts addressed the issue head-on. Beyond formal training, be creative about leveraging skills within the organization, such as teaming with the finance staff to share their knowledge.

5. Establish joint teams. Involve finance staff and business owners at a tactical level to vet ITPM assumptions and confirm that efforts are relevant to the business.

6. Create incentives. IT staff may be reluctant to sign on to an ITPM initiative which is outside their traditional scope and perceived as an overhead or reporting project. If ITPM is really important, link effort and contributions to incentives and recognition.

Build the right metrics and processes

7. Start small. Stay focused. Avoid broad data gathering excursions that could stir up skepticism across the organization. Be selective about what to analyze and specific as to why. New projects are often a good place to start applying ITPM principles.

8. Leverage the budget cycle. If managing change is the toughest part of ITPM, don't ignore established budget practices. Instead, integrate ITPM into existing budgeting cycles. Adopt metrics familiar to the organization, whether EVA, IRR or ROA.

9. Phase adoption of capabilities. ITPM is about introducing a language of transparency, and building confidence and trust across the organization. An all-or-nothing approach will invite resistance. Expand capabilities in ambitious yet controllable stages.

Research Methodology

Hypothesis

The formal research objective was to test five specific hypotheses:

- 1) **The majority of IT leaders are familiar with ITPM; a lack of awareness is not an issue.**
- 2) **Despite awareness, the majority of organizations do not apply ITPM methods.**
- 3) **The majority of companies that do apply ITPM are not as effective as they could be.**
- 4) **The minority that do apply ITPM successfully are achieving relative performance gains.**
- 5) **Companies unable to implement ITPM effectively are held back by similar obstacles.**

In parallel, the team wanted to find out if there were any broadly applicable stages of ITPM effectiveness. By comparing ITPM application data with responses regarding implementation hurdles, a general ITPM adoption trajectory was identified, and along with it, best practices to help organizations accelerate along that path.

Survey and Interviews

The data needed to test the five hypotheses was gathered through a mass survey and targeted interviews. A survey called “IT Portfolio Management Challenges and Best Practices” was mailed to and made available on the Web to top IT executives at U.S.-based Fortune 1000 companies. Both prior to and after sending the survey, the research team interviewed approximately 20 CIOs from a representative sample of organizations to gather more detailed examples of implementation hurdles and best practices, as well as to validate the team's interpretation of the survey results.

Sample: Respondent Demographics

The team received completed surveys from 130 respondents. More than 90 percent of the respondents are corporate CIOs, most often in multi-divisional organizations with a domestic focus. The average respondent has 17 years of IT management experience. Over 50 percent of respondents report directly to the CEO, followed by CFO (31 percent) and COO (22 percent). The average respondent's organization generated \$8 billion in revenues last year and spent 2.9 percent of those revenues on IT. In total, the survey responses were responsible for approximately \$30 billion in annual IT spending.

Glossary of Financial Terms

Return on Investment (ROI)

Definition: Often defined as the total quantitative savings or return, in hours, dollars, or other measurable units, generated by an improvement effort, divided by the total cost of that effort.

IT application: What is ROI? Ask several executives and expect to get several different answers. The definition may or may not include the time value of money, so clarity on what definition is used is important. Even by approximation, its usefulness depends on the validity of underlying assumptions. IT staff that use ROI often do so as a budgeting input rather than as performance feedback.

Net Present Value (NPV)

Definition: The NPV is the sum of the discounted cash flows expected from a business project, less the investment amount. The cash flows are discounted at the firm's cost of capital.

IT application: NPV is used to evaluate and select among investment proposals. In theory, projects with NPV greater than zero should be funded. In practice, NPV is one component of the investment decision and discussing NPV assumptions should help flag and address unrealistic expectations.

Internal Rate of Return (IRR)

Definition: The compounded annual growth rate of a project's net cash flows. Also defined as the discount rate where the NPV of the project is zero.

IT application: Helps prioritize investment proposals. In theory, a proposal with an IRR greater than the cost of capital should be accepted. Project managers tend to prefer IRR over NPV as the time factor of the latter is less intuitive. A potential pitfall of only looking at IRRs is that they don't show the relative size of the opportunities.

Earned Value Analysis (EVA)

Definition: Metrics designed to quantify the actual work done on a project compared to the amount of money actually spent, and the original budget plan.

IT application: Helps forecast and measure the implementation performance of an IT project. Used mostly on large efforts, such as an ERP system implementation, in which multiple teams and parts of the organization are involved in a large program.

Real Options

Definition: The value of investing in a project that will enable additional opportunities in the future.

IT application: Real options enable executives to value management flexibility and additional follow-on investment opportunities. For example, by successfully completing a pilot enterprise data warehouse (EDW) project the downside risk of a large follow-on EDW project can be reduced and the upside potential can be increased. In addition, an EDW once complete might enable CRM and SCM. These are all real options that should be factored into the initial pilot EDW project investment decision.

Endnotes

¹ F. Warren McFarlan, "Portfolio Approach to Information Systems," *Harvard Business Review*, September 1981.

² The Clinger-Cohen Act (formerly the Information Technology Management Reform Act) of 1996.

³ Erik Brynjolfsson and Lorin Hitt, "Beyond the Productivity Paradox", *Communications of the ACM*, August (1998). Vol. 41, No. 8, pp. 49-55.

⁴ In March of 2003 Merrill Lynch appointed John McKinley to the new position of head of its Global Technology and Services Group and Chief Information Officer.

⁵ H.M. Markowitz, "Portfolio Selection," *Journal of Finance*, p. 77-91, March 1952.

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