

How IT Governance Drives Improved Performance

A study of 389 global IT organizations reveals three levels of IT governance maturity as well as specific high-impact governance practices that optimize performance for organizations at each level.

By Kurt Milne and Adrian Bowles

CA funded an IT Process Institute study to assess the maturity of IT governance initiatives, and to identify specific practices that have the biggest impact on governance performance. Analysis of 389 organizations in three geographies indicates that IT governance initiatives are working. Higher levels of IT governance maturity are clearly linked to higher levels of performance, as measured by a group of metrics that gauge the success of governance practices.

Respondents were grouped into three tiers of maturity based on overall use of IT governance practices. Organizations at the foundation level of maturity have governance objectives focused on cost and risk reduction. Organizations at the highest level of IT governance maturity have a broader set of IT governance objectives that also includes a focus on customer and business needs, IT decision making and prioritization, and agility and innovation.

High-impact practices were identified at each level of maturity. Overall, we found that 40 of 66 practices studied predict performance variation. Of those, just 9 practices tested predict more than 25% of the variation at each of the three levels of maturity. High-impact governance practices form a staged three-level framework of practices that should be considered by IT executives looking to improve IT governance results.

Related Resources

IT Process Institute: Performance Based IT Governance Maturity Model



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This study was funded by CA

This research project was funded by the generous support of CA (NASDAQ: CA), the world's largest independent IT management software company. This study identifies IT governance practices that predict top levels of performance. However, IT organizations should weigh this study among other sources of guidance when considering IT governance initiatives.

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About the IT Process Institute

The IT Process Institute is an independent research organization that exists to support the membership of IT operations, security, and audit professionals. Our mission is to advance IT management science through independent research, benchmarking, and prescriptive guidance. Our vision is to bridge industry and university-based researchers to identify and study top-performing IT organizations and enhance the efficiency and effectiveness of the industry.

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Introduction: Balancing Competing Priorities

For many years, IT organizations could succeed by focusing on technology. However, business expectations for IT are rising. The vast majority of business processes are enabled by computers, and organizations have no fallback paper processes. IT-enabled products and services have become a competitive differentiator in almost every industry. As a result, the business-oriented CIO is taking charge.

As the primary role of IT transitions from utility provider to strategic revenue enabler, many companies are implementing IT governance practices to help ensure IT is meeting the needs of the business.

IT governance is recognized as an extension of corporate governance. The IT Governance Institute indicates that corporate governance is the “methodology by which a corporation is directed, administered and controlled. Whereas IT governance supports achieving corporate objectives, strategy, direction, administration and control, using appropriate IT investment and resource management.”¹

Are IT governance practices being used to balance the competing IT priorities of control and agility?

Peter Weill, recognized IT governance thought leader and author, defines IT governance as “specifying the decision rights and accountability framework to encourage desirable behavior in using IT.”²

However, as IT organizations make the transition from an internal utility service provider to a revenue enabler, they often reveal a core conflict. The conflict is between (a) managing business-critical systems with the control and stability needed to achieve target levels of availability, performance, security, and cost and (b) the agility and velocity needed to meet the changing requirements of a dynamic business environment. Business often gains advantage by moving quickly to address an emerging or unique customer need. IT often reduces cost and improves efficiencies of scale through consolidation and standardization. However, standardizing and consolidating IT may or may not create strategic advantage at many companies.

A fundamental question emerges as IT transitions from a utility service provider to a revenue enabler: Are IT governance practices being used to balance the competing interests of internally focused cost and control objectives with externally focused customer and business needs?

IT governance efforts at many organizations have historically focused on risk reduction, cost containment, and decision enablement. However, as the business increasingly leverages IT to streamline business processes and enable revenue-producing products and services, can IT governance practices also ensure that IT is responding to and prioritizing business demands in a way that enhances competitive positioning and thus revenue growth and profitability? Are IT governance practices being used to balance the competing IT priorities of control and agility?

CA, an independent software vendor of solutions that unify and simplify IT management,³ funded an IT Process Institute (ITPI) research project to help understand the current level of maturity of IT governance initiatives, and to also identify specific practices that have the biggest impact on performance.

ITPI collected survey data from IT executives at 389 IT organizations from a broad spectrum of industries in North America, the United Kingdom, and Australia. These executives represent organizations that have annual revenue or an operating budget of at least \$100 million. (See Study Demographics on page 17.)

The study findings and resulting maturity model are based on an analysis of the relationship between specific IT governance practices and various measures of IT governance performance. The IT Governance Institute model, including five domains of IT governance,³ was used as the overall framework for the study (see Figure 1). The practices tested were identified during a series of interviews with ten IT governance subject matter experts in North America, Europe, South Africa, and Australia. Subject matter experts suggested the 66 practices in the five domains, and they also suggested measures that would indicate whether those practices were working.

We conducted this study to identify specific IT governance practices that have the biggest impact on performance.

Analysis revealed groups of organizations at three levels of IT governance maturity. Out of 66 individual practices, 40 were found to predict top levels of performance at a statistically significant level. Of those practices, 9 were found to predict a performance variation of 25% or more. A short list of five performance drivers for each of the three maturity levels creates a prescriptive list of IT governance practices that IT executives should consider as they seek to improve the results of their IT governance initiatives.

IT organizations should consider a wide range of sources of information when exploring and assessing practices for implementation at their organization.

This study provides information about specific practices that are shown to predict top levels of performance for organizations at different levels of IT governance maturity. However, this information should be used in the context of an organization's current state and IT governance objectives when identifying and prioritizing improvement projects.

Finding #1. IT Governance Initiatives Are Working

People interested in or responsible for IT governance initiatives often ask this fundamental question: Does IT governance work? Our conclusion is yes: There is a strong correlation between the use of a broad range of IT governance practices and higher levels of performance related to those practices.

We assessed the level of use of 66 practices in five IT governance domains included in the IT Governance Institute model, as seen in Figure 1.⁴ We also assessed performance by asking how well the practices achieve results on 15 measures: three measures related to each of five domain areas.

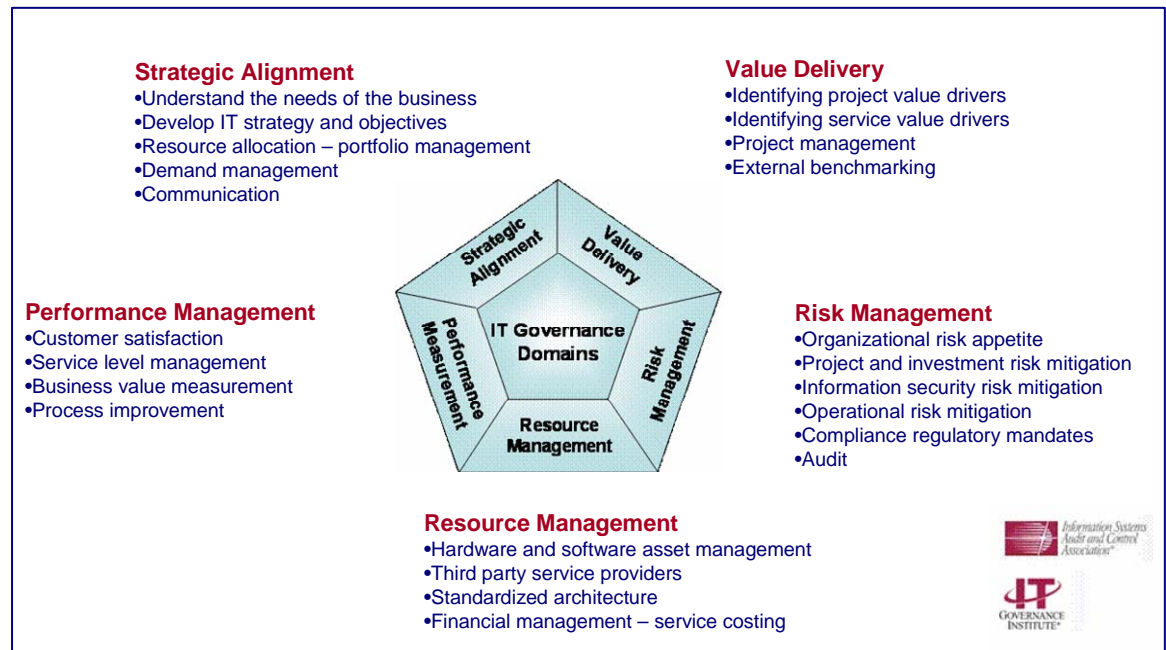


Figure 1. Scope of IT governance practices and measures studied

For example, the strategic alignment domain includes understanding the needs of the business, developing IT strategy, determining resource allocation, managing resource demand requests, and facilitating IT to business communication.

Some of the 15 strategic alignment practices tested include the following:

- IT actively solicits feedback and negotiation on IT resource allocation plans to ensure a balanced set of business needs are met.
- IT has a system or framework to evaluate, prioritize, and allocate resources to more tactical IT service requests.

- IT has a business relationship manager to actively manage relationships with specific enterprise or business unit executives.

The three measures for strategic alignment are:

- My IT organization consistently and effectively identifies what is needed by the business—including business strategy, key success factors, and goals and objectives.
- My IT organization consistently and effectively develops IT strategies and objectives that meet the needs of the business.
- Our overall IT spending mix on existing and new IT capabilities effectively balances the needs of various internal customers.

Survey respondents (predominantly IT executives) assessed their use of each practice and level of performance on a 1-to-10 scale.⁵

Analysis indicates a strong correlation between the overall use of IT governance practices and overall governance performance. The use of IT governance practices was measured by the average combined score of all of practices on a 10-point scale. Performance was measured by combining the scores of 15 performance measures on a 100-point scale.⁶

Higher levels of use of all IT governance practices in the study predict higher levels of overall performance. Figure 2 shows a scatter plot of performance (on a 100-point scale) and average practice usage (on 10-point scale).

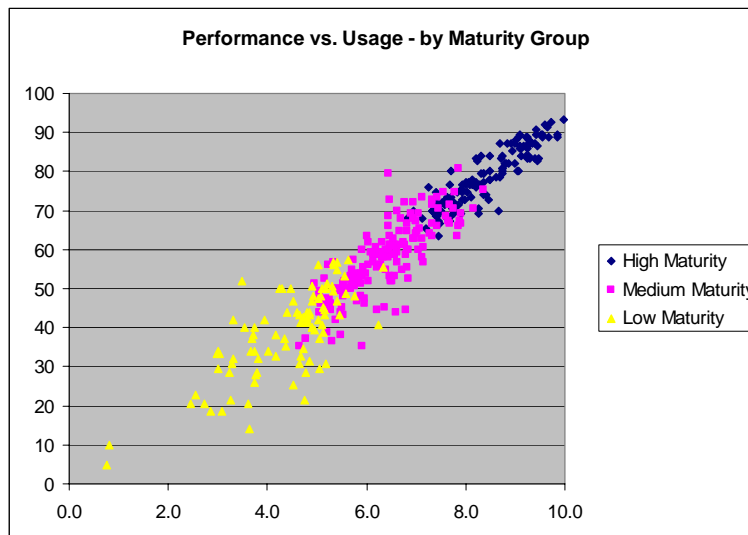


Figure 2. Performance score versus IT governance usage score for three maturity groups

Cluster analysis techniques identified three groups of organizations on the basis of their use of each of 66 individual IT governance practices, and a single overall measure of performance.⁷

Three levels of maturity were identified based on combination of use of practices, and performance. Figure 3 highlights the difference in use of governance practices and performance.⁸ The high-maturity group had the broadest use of governance practices (average 8.4 out of 10) and highest performance (85 out of 100). The low-maturity group had an average usage score of 4.4 and performance of 47.

Maturity Group	# in group (% of 389)	Average score all practice questions (0 to 10 scale)	Performance (0 to 100 scale)
High	137 (35%)	8.4	85
Medium	158 (40%)	6.4	65
Low	93 (25%)	4.4	47

Figure 3. Performance differences at three levels of maturity

The presence of a strong link between greater use of IT governance practices and higher levels of performance allows us to explore and identify specific practices that best predict top levels of IT governance performance at each level of maturity.

A strong link between practice and performance allows us to identify high-impact practices at each level of maturity.

Finding #2. IT Governance Initiatives Are Primarily Focused on Cost and Risk Reduction

IT governance covers a broad scope of management activities. We asked open-ended questions to determine what organizations are trying to accomplish with their IT governance initiatives. Answers indicate that the most common IT governance objectives are focused on cost containment (including efficiency, standardization, and automation) and risk reduction (including compliance, security, and public scrutiny of IT failures). This is perhaps not surprising, given the recent economic climate and global surge in regulatory requirements imposed on IT organizations.

However, given the context of IT organizations transitioning from a utility service provider to a more strategic revenue enabler, the current mix of IT governance objectives is less focused on ensuring that IT enables product and service differentiation, IT agility and innovation related to meeting changing business needs, or even IT demand management and resource prioritization.

Has IT governance fallen into a cost and risk rut?

The highlighted focus on cost- and risk-related objectives indicates IT governance initiatives aren't concentrated on customer-centric business requirements that enable revenue and profit growth.

Figure 4 indicates the frequency of answers to an open-ended question about the objectives of organizations' IT governance initiatives. They indicate that cost and risk reduction are the most common objectives. Customer- and market-facing differentiation, decision making and resource prioritization, and agility and innovation are less frequently the objective of IT governance initiatives.

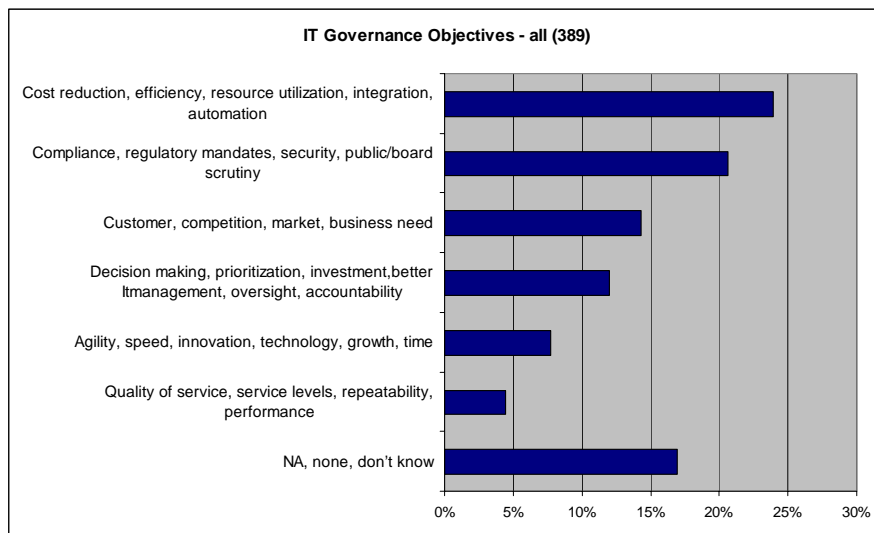


Figure 4. Ranked IT governance objectives

For most businesses, cost containment is desirable, but not a business strategy. Compliance is a requirement mandated by law, but is not itself a strategy for gaining and keeping customers as well as driving revenue and profit growth.

If we return to the definition of IT governance as a set of practices that help IT achieve business objectives, then IT governance objectives should be more aligned with broadly enabling business success and less focused on compliance and cost containment.

Our conclusion is that as IT becomes a more strategic business enabler, organizations should leverage the success of cost and risk focused IT governance initiatives, and expand objectives to also include meeting strategic business objectives, improve agility to meet changing business needs, and enable product and service enhancements that improve competitive differentiation.

Finding #3. High-Maturity Organizations Are More Focused on Overall Business Objectives

Analysis of the objectives of IT governance initiatives for three different maturity groups in the study indicates that high-maturity organizations have a broader IT governance focus. For these organizations with the broadest use of IT governance practices and highest performance levels, we find that IT governance initiatives are more focused on achieving business objectives, and less so on cost containment and risk reduction.

What the business needs from IT differs from company to company. Cost containment in IT may directly support business strategy in firms that pursue a cost leader strategy. But for many other firms, cost containment and risk reduction are not the primary ways that IT enables strategic success. For businesses that pursue a niche or differentiation strategy, then IT is best aligned with strategic objectives by enhancing business process optimization efforts, or by technology-enabling product and service enhancements that support competitive differentiation.

Looking at how IT governance objectives differ by maturity group, we find that companies with high maturity have different objectives for their IT governance initiatives. Again, maturity is determined by a combination of use of governance practices and performance. Groups that have a broad mix of governance practices and high performance scores are considered high-maturity organizations.

Figure 5 highlights the mix of IT governance objectives previously shown in Figure 1, segmented by maturity group.

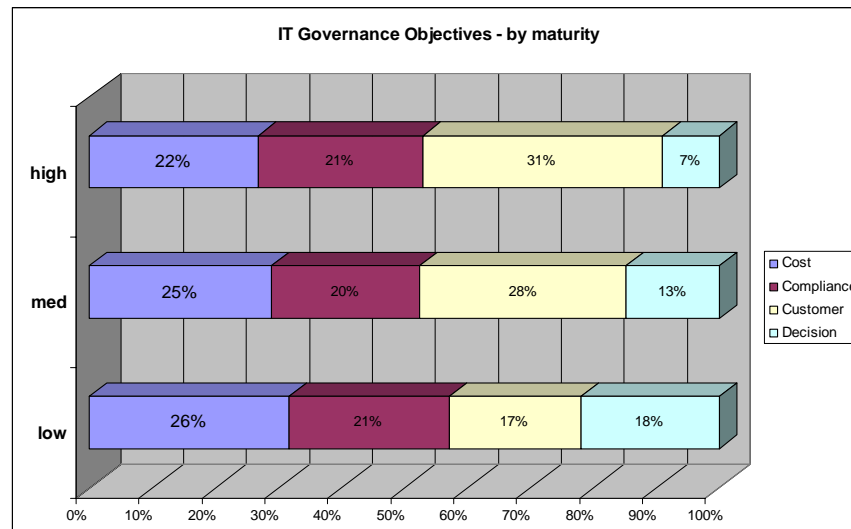


Figure 5. IT governance objectives by maturity group

The study revealed the following about the maturity groups:

- Low-maturity organizations (those with lower usage of IT governance practices and lower performance scores) have IT governance objectives that are more focused on cost and compliance objectives. In these organizations, 56% of stated IT governance objectives are related to these two areas.
- Medium-maturity organizations (those with moderate IT governance practice usage and medium performance scores) are also focused on cost objectives, but these organizations also have a greater focus on customer- and business-related objectives (28% versus 17%).
- High-maturity organizations have the highest focus on customer- and business-related objectives (31%) and the lowest level of focus on cost containment.
- All three have a similar level of focus on compliance and risk management (21%, 20%, and 21%).
- Interestingly, the high-maturity group has the least focus on IT decision and prioritization objectives for IT governance initiatives. One possible explanation is that at higher levels of maturity, effective demand management and prioritization practices are already in place and therefore are not the focus of new IT governance initiatives.

Other study data also indicates how high-maturity organizations are different than others in the study. Note that these differences do not necessarily indicate a causal relationship to IT governance practices and performance, but they do paint a picture of how these organizations may differ from the others in the study.

The high-maturity IT organizations in the study tend to be from larger companies and in more heavily regulated industries. Indeed, 71% of high-maturity group are from heavily regulated industries vs. 65% for others in study. Also, 49% of high-maturity groups have 5,000 or more employees, compared to 44% for others in study.

From a funding standpoint, the high-maturity group has a similar level of funding as other groups, with an average IT budget that is 2.1% of revenue. However, high-maturity organizations are more likely to have a growing IT budget—73% of the high-maturity group have a budget growing at 1% or more annually, compared to 57% of other organizations in the study.

CIOs from high-maturity organizations are more likely to report directly to the CEO (69% compared to 60% and 45% for medium- and low-maturity groups). High-maturity organizations are also most likely to have a clear corporate strategy to align with: In the high-maturity group, 25% have a mixed or unclear strategy compared to 33% and 40% for medium- and low-maturity groups.

From a resource utilization standpoint, high-maturity organizations have a ratio of 9.5 employees per IT employee compared to an average of 7.1 and 6.0 for medium- and low-maturity organizations.

High-maturity organizations also spend an average of 38% of the total capital and operating IT budget on new initiatives, which is 10% more than others in the study.

At a more tactical project management level, 97% of high-maturity organizations have a project management function, and those resources are focused on a broader set of responsibilities than those at lower-maturity organizations. High-maturity organizations have a broader definition of project success, including regulatory, security, and release requirements as well as verifying business benefits were achieved. By comparison, low-maturity groups define project success primarily on budget and functional criteria. Finally, high-maturity organizations are more likely to cancel projects due to changing business drivers or business needs than other levels of maturity. On average, high-maturity organizations cancel 20.6% of projects due to changing business priorities, which is a 10% higher rate than others in the study.

Another view of how performance differs for these groups is revealed by looking at how the IT executives surveyed self-assessed their added value to different aspects of the business.⁹

Figure 6 shows that the high-maturity group has the highest scores overall, but this group also has near even performance related to how well IT adds value to information management, business process efficiency, customer satisfaction, and products and services. Organizations in the low-maturity group, on the other hand, have the lowest value add scores overall. Their best performance is adding value to information and business process. They score lower in the areas of adding value to customer satisfaction and IT-enabled products and services.

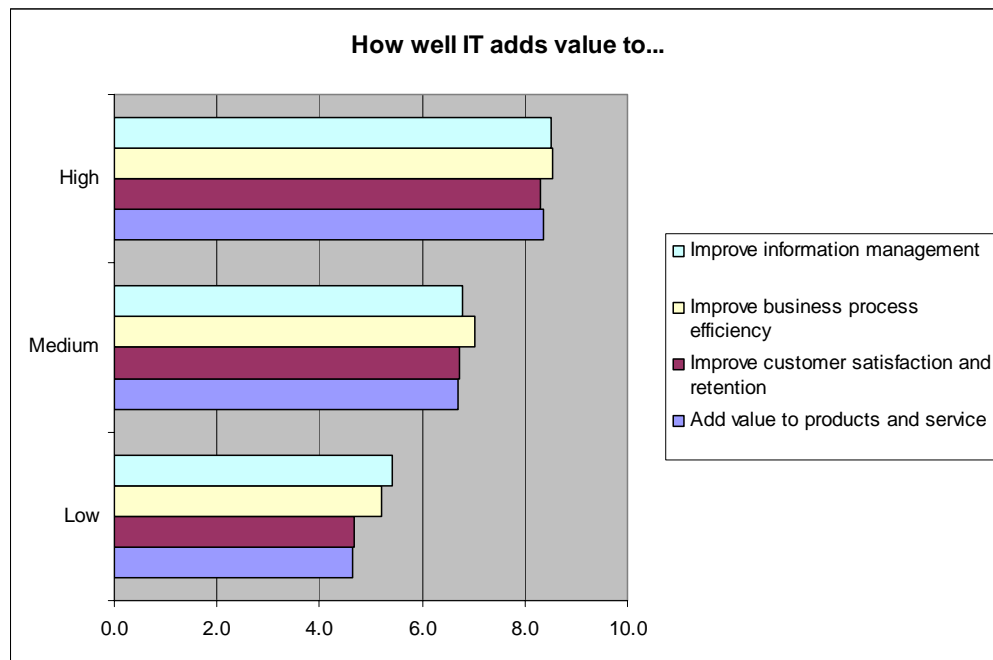


Figure 6. Performance as indicated by business value added by IT

Not only do high-maturity organizations score 24% to 65% higher than other maturity groups (8.4 vs. 6.8 vs. 5.0), but high-maturity organizations also score higher in the areas of customer satisfaction and improved products and services.

Overall, high-maturity organizations are more focused on customer and business objectives, and they have significantly higher performance. They have a more even and customer-focused mix of IT governance objectives, current initiatives, and practices—as compared to lower-maturity organizations, which are more focused on risk and cost reduction. They also have significantly higher performance in all areas and add more value to customer and product or service differentiation.

Finding #4. High-Impact Governance Practices Revealed for Each Level of Maturity

Not all IT governance practices have an equal impact on performance. For IT organizations looking to get the most out of their initiatives, which of the practices should they focus on? We identified specific practices that best predict top levels of performance for the low-, medium-, or high-maturity organizations in the study.

We used regression analysis to identify specific practices that have the biggest impact on performance for each maturity level.¹⁰ Out of 66 individual practices, 40 were found to predict top levels of performance at a statistically significant level. Of those practices, 9 were found to predict a performance variation of 25% or more, and are identified by “*” in the table below.

Figure 7 shows the high-impact IT governance practices in descending order of contribution to performance, for three levels of IT governance maturity. IT organizations should consider and implement the level 1 foundational IT governance practices at the bottom of this table, before moving up to the practices highlighted at level 2 and level 3 maturity. These IT governance practices aren’t necessarily widely implemented by the organizations at each level of maturity, but they do best predict top levels of performance. In other words, these are the practices that the top performers have in common, at each level of maturity.

Maturity Group	High-Impact IT Governance Practices
Level 3	<p data-bbox="553 1220 1062 1251">Measured and Optimized IT Governance</p> <ul data-bbox="553 1291 1474 1843" style="list-style-type: none"> <li data-bbox="553 1291 1390 1360">• Resource planning linkage*—Current and planned resource capabilities are linked to the project prioritization process. <li data-bbox="553 1367 1474 1507">• Collaborative audit relationship*—IT audit has a cooperative relationship with IT operations and helps verify that the use of key operating processes and procedures improve performance as well as mitigate risk. <li data-bbox="553 1514 1464 1654">• Business value measured*—IT performance measures include operating performance as well as the business value delivered by IT; that is, customer satisfaction, process efficiency gains, revenue, and so forth. <li data-bbox="553 1661 1438 1730">• Customer satisfaction measured—Surveys are used to measure the satisfaction of users of applications and IT-enabled solutions. <li data-bbox="553 1736 1474 1843">• Business communication—IT regularly communicates with business managers to review accomplishments and build awareness of IT success and value.

<p>Level 2</p>	<p>Enhanced IT Governance Practices</p> <ul style="list-style-type: none"> • Process culture*—Following documented processes and procedures is a basic IT job expectation and IT executives clearly communicate that “process is how we do things here.” • Risk-based planning*—Risk assessment and risk measures are used as a component of IT planning and strategy alignment, including project and service level management. • Tactical demand management—A defined system or framework is used to evaluate, prioritize and allocate resources for more tactical IT service requests. • Transparent project assumptions—Approved projects include cost, resource, and time assumptions that are used to justify and prioritize the project, in addition to business value assumptions. • Asset management—IT focuses on the efficient use of existing resources, including alignment with business service and compliance requirements.
<p>Level 1</p>	<p>IT Governance Baseline</p> <ul style="list-style-type: none"> • Collaborative risk management*—Business and IT work together to develop an overall approach to IT risk management. • IT strategy baseline*—IT strategy and objectives are formalized before making resource decisions about issues such as organizational structure, third-party sourcing, and staffing levels. • Agile infrastructure*—Computer resources are designed to be flexible, so that applications and infrastructure can adapt to meet changing business requirements. • Explicit project value*—The business value of each IT project is clearly identified, such as improving efficiency, optimizing business process, driving new revenue, and so forth. • Explicit service value—The business value of each production IT service is identified, such as improving efficiency, optimizing business process results, driving new revenue, and so forth.

* indicates a practice that predicts greater than 25% variation in performance

Figure 7. High-impact IT governance practices

Level 1 maturity organizations (those with lower usage of IT governance practices and lower performance scores) have IT governance objectives that are more focused on cost and risk reduction (as seen in Figure 5). The high-impact IT governance practices that are shown to optimize performance at this initial level of maturity, however, move beyond cost and risk to also focus on agility as well as project and service value that may not be cost oriented. This set of practices can be considered foundational practices that enable basic IT governance capabilities. Although these practices should be implemented before the higher level practices, improvement and optimization of these processes should be ongoing.

Level 2 maturity organizations (those with moderate IT governance practice usage and medium performance scores) also focus on cost objectives, but they have a greater focus on customer- and business-related objectives. The high-impact IT governance practices at this maturity level build on the foundational practices to include supporting a process culture, asset management, tactical demand management, and improving transparency of project assumptions.

Level 3 maturity organizations (those with the broadest use of IT governance practices, and highest performance scores) have the highest focus on customer- and business-related objectives and the lowest level of focus on cost containment. The high-impact practices at this level of maturity include business value measures and business communication, as well as improving the linkage between resource capabilities and project planning. What bears mentioning, however, is the key role that IT auditors play at this stage of maturity. At lower maturity levels, IT auditing is often viewed as a constraint. Mature organizations, however, have learned to use IT auditing as a tool to achieve their operating objectives as well as addressing compliance mandates.

Conclusion: Use Study Findings to Improve IT Governance Performance

As the IT organization makes the transition from utility service provider to a more strategic revenue enabler, IT governance can be a powerful tool for enabling business success. However, this study suggests that at many organizations, IT governance initiatives are more focused on cost containment and risk reduction objectives. Focus on customer differentiation and enabling business needs has taken a lower priority than more foundational cost and risk reduction objectives.

The good news is that IT governance initiatives are working. Those organizations at higher levels of IT governance maturity have higher levels of performance. And, we find that organizations that have high levels of IT governance maturity have built on risk and cost focused governance efforts, and are more broadly focused on customer and business objectives. These organizations achieve consistently higher levels of business value-add than others in the study.

The practices that predict the highest levels of performance at each level of maturity form a staged model of recommended IT governance practices. The practices that are shown to best predict top performance at each of three levels of maturity should be considered by those organizations looking to improve results from IT governance initiatives. The staged model can also help organizations build on foundational IT governance practices, to shift their focus to more customer-facing and revenue related business objectives.

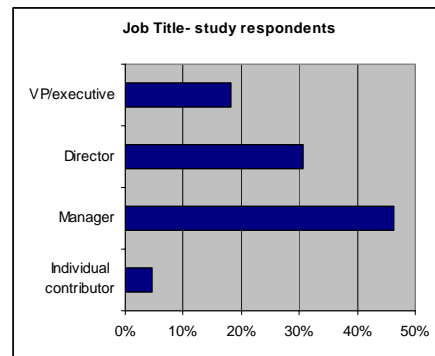
Study Demographics

We developed a Web-based survey to collect data on IT governance practices and performance measures. Specific practices and measures tested were identified by interviewing 10 subject matter experts in IT governance. We asked them which practices they believed improved IT governance success, and we asked which measures would indicate those practices are working.

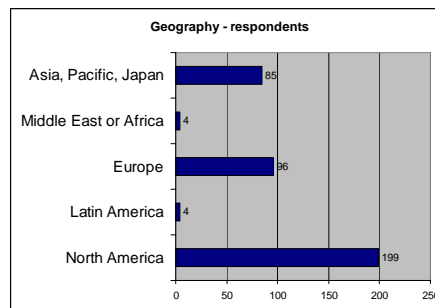
HANSA/GCR, a custom research firm, developed the Web-based survey and managed data collection. The survey respondents were invited from IT executive interview panels in North America, the United Kingdom, and Australia.

A broad range of industries are represented in the study population. The top represented industries include banking, finance and insurance (13%); manufacturing—not high-tech (13%); health care (10%); government (10%); business services (10%); and high-tech manufacturing (9%).

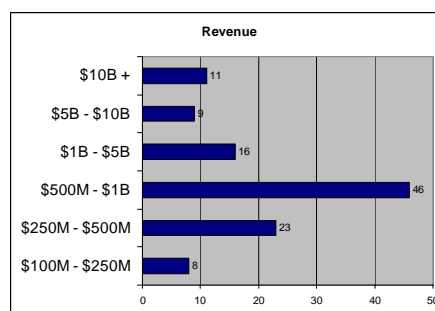
Almost 50% of survey respondents were vice presidents, IT executives, or had director-level job titles.



Surveys were all conducted in English; respondents were located in North America, the United Kingdom, and Australia.



A broad range of company revenues (or operating budgets if public agency) are represented. Of the companies surveyed, 31% had less than \$500 million, 46% had between \$500 million and \$1 billion, 25% had between \$1 billion and \$10 billion, and 11% had revenue greater than \$10 billion.



Endnotes

¹ *Board Briefing on IT Governance, 2nd Edition*, IT Governance Institute.

² Peter Weill and Jeanne W. Ross, *IT Governance: How Top Performers Manage IT Decision Rights for Superior Results*, Harvard Business School Press (2004), p. 2.

³ CA is a managing sponsor of the IT Process Institute. The company's ongoing support enables a significant portion of ITPI independent research efforts. CA provides funding to help the ITPI study the practices of top-performing IT organizations. CA helps select research topics but does not influence study analysis or conclusions. This IT governance study was funded solely by CA.

⁴ IT Governance Institute has five domains of IT governance, including:

Strategic Alignment

- How IT supports the enterprise strategy
- How IT operations are aligned with current enterprise operations

Value Delivery

- How IT delivers appropriate quality on-time and within budget
- How actual cost and ROI is managed

Risk Management

- Addressing the safeguard of IT assets, disaster recovery and continuity of operations including security and information integrity

Resource Management

- How IT optimizes and manages critical IT resources

Performance Management

- How IT tracks and monitors strategy implementation, project success, resource usage, process performance and service delivery

Based on subject matter expert interviews, we developed a list of IT governance practices that would be assessed in the data collection survey. Survey respondents were asked to answer 66 questions related to these five domains: Indicate how much each statement applies to your organization where a "0" means the statement *does not apply at all*, a "5" means it *applies in some aspects/areas*, and a "10" means it *applies broadly across the organization*.

The following table shows the average scores for all 66 questions on a 0-to-10 scale, and it shows the percentage of each maturity group whose average for all questions is 7 or higher (considered "in use").

Group	Average score all practice questions	% of each group that averages 7 or above on 0-to-10 scale on all practice questions
High	8.4	93.2%
Medium	6.4	48.2%
Low	4.4	16.0%

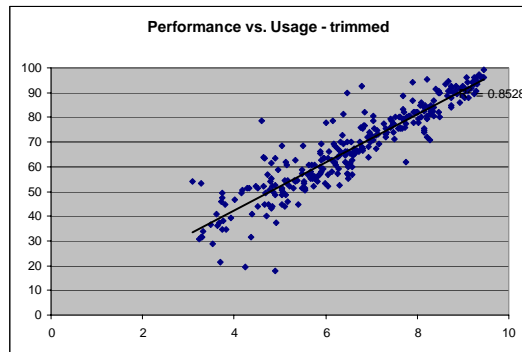
⁵ Based on subject matter expert interviews, three performance measure questions were identified for each of the five IT governance domains. Following each set of practice questions, we asked three performance questions. Survey respondents were asked to consider the results of how well their IT organization achieves the objectives of the five IT governance domains: Indicate how much each statement applies to your organization where a "0" means the statement *does not apply at all*, a "5" means it *applies in some aspects/areas*, and a "10" means it *applies broadly across the organization*.

Answers for all 15 performance measures were evenly weighted, added, and normalized to a 100-point scale.

The following table shows the average total score (on a 100-point scale) for each maturity group.

Group	Average performance score all 15 measure questions
High	85
Medium	66
Low	47

⁶ The following figure shows a scatter plot of overall performance as a function of average usage score. R-squared .85 indicates that there is a strong correlation between the use of IT governance practices, as measured by the average practice usage score for 66 IT governance practices, and performance as measured by the overall performance score for 15 evenly weighted measures.



⁷ Cluster analysis revealed three groups of study participants, based on how they answered 66 individual practice questions, and one overall performance measure. The overlap of the three groups on the two-dimensional scatter plot in Figure 2 results from analysis of common answer patterns, not just the overall practice usage score. The distributions of usage scores are all (or nearly all) normal for each maturity group. The different maturity groups consistently rated themselves at certain points on the scale. And, the fact that these maturity groups correlate so well with performance is a strong finding that maturity is clearly related to performance.

⁸ Practice 1-to-10 scale. We consider a practice 'in use' if it scored 7 or higher.

⁹ We added the IT value question to the survey after speaking with an IT governance executive who indicated that IT adds value to the business in only four ways: (1) Does IT help managers make better decisions? (2) Does IT help streamline and automate business processes that help differentiate the company and acquire customers? (3) Does IT help improve customer satisfaction in order to retain customers? (4) Does IT enable or add value to customer-facing products and services?

¹⁰ We used stepwise linear regression analysis techniques to identify specific practices that best predict performance variation. We developed fifteen different regression models, one for each maturity group for each of 5 IT governance domains. The combined score of three performance measures (1-to-100 scale) in each governance domain, was used as the dependent variable. Each of the practices in the domain, were used as independent variables. Of the 66 practices analyzed in 15 different models, 40 were identified as having a statistically significant impact on performance at a 0.5 level of significance, and 9 of the 66 practices predict a performance variation of 25% or more.