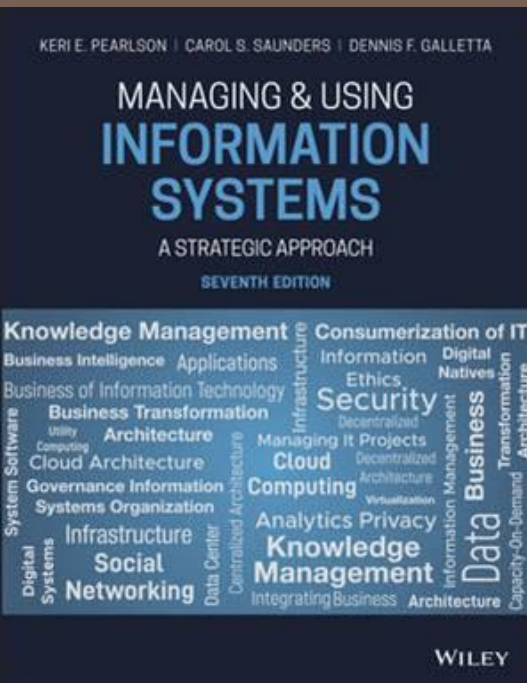


CHAPTER 8

THE BUSINESS OF INFORMATION TECHNOLOGY



Managing & Using Information Systems: A Strategic Approach (7th Edition),
Pearlson, Saunders, & Galletta

Chapter Introduction

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- This chapter **explores** the business of information technology (IT) and the customers it serves.
- Beginning with the introduction of a maturity model to understand the balancing act (갈등조정, 균형잡기) **between** the supply **and** business demand for information systems (IS), the chapter **describes** key IT organization activities and **relates** them **to** one of three maturity levels.
- The chapter **continues** with a discussion about the work done by the IT organization and how the leadership within the IT organization **ensures** that activities are conducted efficiently and effectively, both domestically and globally.

Chapter Introduction

3

- We then examine business processes within the IT department, including:
 - **Building a business case** (사업계획서 작성)
 - **Managing the IT portfolio** (IT 포트폴리오 관리)
 - **Valuing and monitoring IT investments** (IT 투자 가치평가 및 모니터링)
- The remainder of the chapter focuses on funding models and total cost of ownership.

CASE: The Horner/Alcoa Story

4

- After several months in the job of chief information officer (CIO) of Alcoa's Industrial Chemicals Business, Kevin Horner received a **wake-up call** (경고, 경각심) from the president of the business:
 - *We chose you because you were the best of the IT group, and you are doing a great job completing IT projects and managing the IT organization.*
 - *But I am afraid that you don't know the business of your business.*
 - *You haven't thoroughly answered my repeated questions about how much IT costs the business!*
 - *Furthermore, you can't communicate with the people running the business in words they understand!*



CASE: The Horner/Alcoa Story

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- As a high-achieving math major in college with minors in computer science and business, Horner was quite savvy about his craft and did not expect to hear these remarks.
- When he protested that the **structure** of the financial information in European and Asian subsidiaries **made it really difficult to find the answer**, his boss's response surprised him:
- "If it wasn't a hard problem, I wouldn't need you here!"
- Interpreting this unpleasant meeting as his being "under review" for possible ouster, Horner saw this as a wake-up call to the true meaning of being a C-level executive.

CASE: The Horner/Alcoa Story

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- He had found some answers about cost issues, but many of the financial numbers were "buried"— inextricably (불가분하게) intertwined in general categories of financial statements in Europe and Asia.
- He had some early results, but managing the IT group took most of his time and effort.
- Further, his early presentations were heavy with technical details and were often met with glazed (멍한) eyes and yawns.
- Horner reported that he began to realize that this audience did not want to hear about the technology.

CASE: The Horner/Alcoa Story

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- "They certainly wanted me to handle technology issues, but they wanted me to communicate with them in words they understood ... people, time, money and the possibilities technology created for them in their businesses.
- Most importantly they wanted me to help them to use IT to grow the business at either the top line (sales) or bottom line (net income)."
- Horner embarked on a re-energized mission to answer all of the president's concerns in a more complete way, and that mission ultimately paid handsome dividends both to him and Alcoa.

CASE: The Horner/Alcoa Story

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- If success can be measured by promotions, he went far beyond redeeming (만회) himself.
- After five years as CIO of Alcoa Chemical, he had many promotions until he ultimately became CIO of Alcoa Global.
- In 2011, he took an opportunity to become chief executive officer (CEO) of Mastech, a \$100 million publicly traded IT staffing firm where he remains.
- How did he achieve such resounding (emphatic, 굉장한) success?
- The first thing he did was to partner with the CFO to understand the financials of the business.



CASE: The Horner/Alcoa Story

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- The CFO was able to determine how to peel back **(remove)** the layers of accounting numbers and truly **wrestle** the IT costs **from** the general accounting categorizations where they comfortably hid.
- Within 60 days, the president and his management team had their answers.
- But Horner did not stop at a good, solid set of internal cost numbers, a remarkable achievement in and of itself (**그것 자체는**).
- Rather than only gaze **(look)** inside the firm, he found it most helpful to use the Hackett Group, an external benchmarking consulting firm, to **compare** his costs **against** those of similar firms.

➤ **Wrestle A From B:** B에게서 A를 빼앗다



CASE: The Horner/Alcoa Story

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- This analysis was most helpful for the leadership of the business because after finding that the company was high on some key IT costs, the leaders all saw the **writing on the wall** (불길한 경고) for the next mission:
 - Find ways to reduce costs but continue to provide improved services.
 - Two key examples of how Horner addressed those needs will help explain his early success.
 - He **accompanied** salespeople **on** actual sales calls to see exactly how the overall supply chain process worked.
- **Writing on the wall: An ominous warning; a prediction of bad luck.**

CASE: The Horner/Alcoa Story

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- Then with that information as a base, he was able to have the business **provide** reliable product information **to** customers, accelerating delivery of the products customers needed without creating excessive inventory buffers.
- Horner also worked with procurement officials to renegotiate contracts for the highest-cost elements within the company's IT spending.
- For example, two very costly areas included telecommunications costs (including cell phones) and PCs.

CASE: The Horner/Alcoa Story

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- He found two important cost-savings opportunities: **eliminate** unnecessary services and **negotiate** many small separate contracts as a larger unit, **raising** the business's bargaining power.
- As contracts would come up for renewal, a joint team from IT and procurement spearheaded **(led)** an intense process to streamline costs, focusing on the highest cost elements first.
- These contract negotiations led to another benefit: **standardization**, which enabled further savings by **simplifying** items such as interconnectivity between segments of the business and PC and mobile phone support.

CASE: The Horner/Alcoa Story

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- The lessons learned in Horner's initial CIO role in the chemicals business **transferred** naturally **into** his next role as CIO of Alcoa Europe, which was a collection of historical Alcoa businesses and locations along with several newly acquired companies representing what Horner called "kind of a \$3B 'start-up' company."
- He knew immediately that he had to get a clear picture of the IT business in Europe from several perspectives--technology, applications, people, vendors, cost, and "quick wins (**즉각적 성과**) ," which solved problems for his business leadership colleagues.

CASE: The Horner/Alcoa Story

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- This time Horner didn't need the questions from the business president to guide him:
- He had to quickly **assess** talent in his team, **determine** total IT cost in the business, **assist** the management team to move to Europe from a structure **focusing** on legal entity driven reporting and **reporting** finances in a new structure that **aligned with** corporate Alcoa and unified pan-European (범유럽) business units.

CASE: The Horner/Alcoa Story

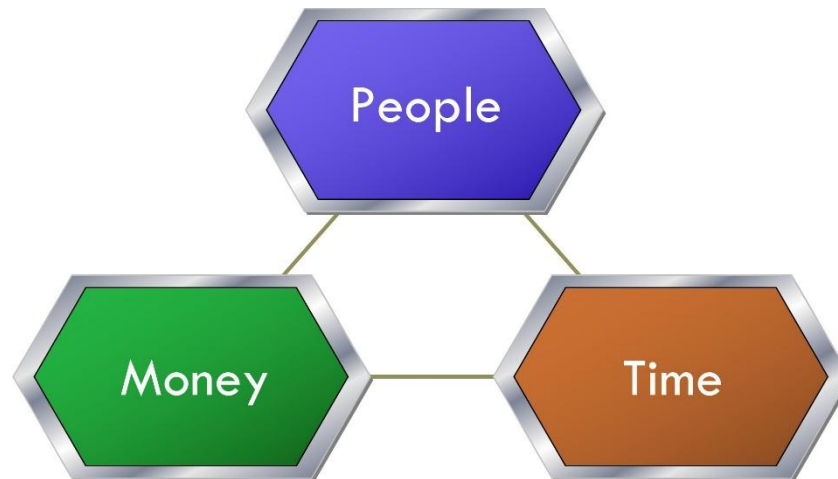
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- As a result of his business-focused thrusts (요지/취지), within 24 months, the entire unified structure was created and implemented;
- Legal entity fiscal reporting was maintained;
- A shared service function for finance, accounting, HR, and procurement plus the technology to operate it was implemented;
- Y2K remediation (복원) was completed; and
- European IT costs were reduced by 25%.

CASE: The Horner/Alcoa Story

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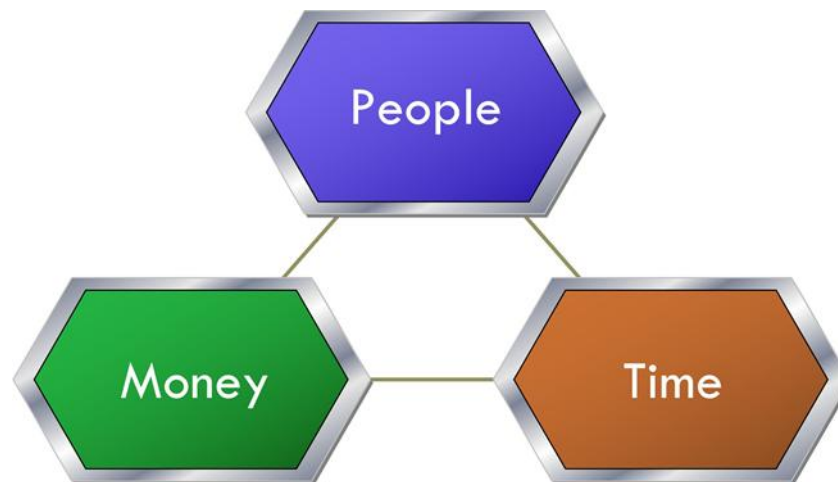
- What does this experience demonstrate?
- It shows that there are common denominators that every business leader understands: **people, time, and money.**
- When a business leader wants to invest capital to produce more product or a new product, that investment is scrutinized for cost and benefit.



CASE: The Horner/Alcoa Story

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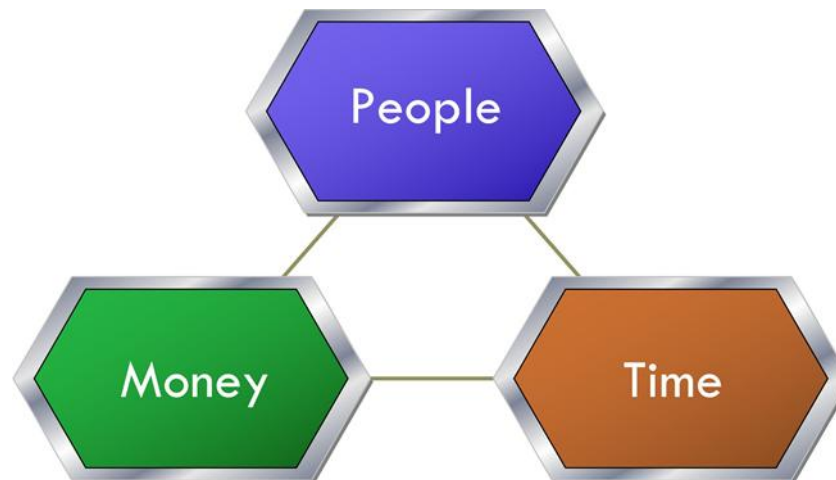
- Horner says that a CIO should make sure IT is not the exception to that rule.
- "Don't talk about ERP or mobile apps, talk about what is going to happen to the business ... [and] to people, time, and money when you have the ERP or the mobile app," he says.
- "**Getting** the cost side of the IT organization **in order** represents table stakes (판돈, 필요금액) for the CIO," implying that you would wear out your welcome by focusing inward.



CASE: The Horner/Alcoa Story

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- Rather than focusing only on managing the technologies and IT people and describing new investments and initiatives by using "techy" jargon, a CIO should take a business viewpoint.
- If you follow that advice, you will **not only** be welcome at the table **but also** will thrive.
- This demonstrates the Business of Information Technology, the title of this chapter.



Organizing to Respond to Business: A Maturity Model

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- Merlyn's business-IT maturity model in Figure 8.1
 - At Level 1, representing an immature IT organization, IT managers maintain an inward focus.
 - ✓ They merely react to specific needs that are brought to their attention, often in an environment that emphasizes cost reduction.
 - As the IT organization matures to Level 2, the focus shifts to business processes, and IT personnel search for solutions to business problems.

Organizing to Respond to Business: A Maturity Model

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- Merlyn's business-IT maturity model in Figure 8.1
 - Level 3 represents IT managers as business partners who search for ideas that **provide** value **to** the organization and value relationships both inside and outside **not only** the IT organization **but also** the firm.
 - ✓ They seek ideas that provide **not only** new revenue **but also** help identify new opportunities that redefine the business.

Maturity Level	Nature of the Level	Engagement Characteristics
Level 3: Business Transformation (Innovate)	IT as business partner	- Proactive - Outside-in - Relationship centric - Focused on business growth - Framed on a context of business value
Level 2: Business Effectiveness (Improve)	IT as solutions provider	- Active - Process centric - Focused on solutions - Framed in a context of projects
Level 1: Business Efficiency (Support)	IT as order taker	- Reactive - Inside-out - Technology centric - Framed in a context of cost

Figure 8.1.1 Business-IT Maturity Model.

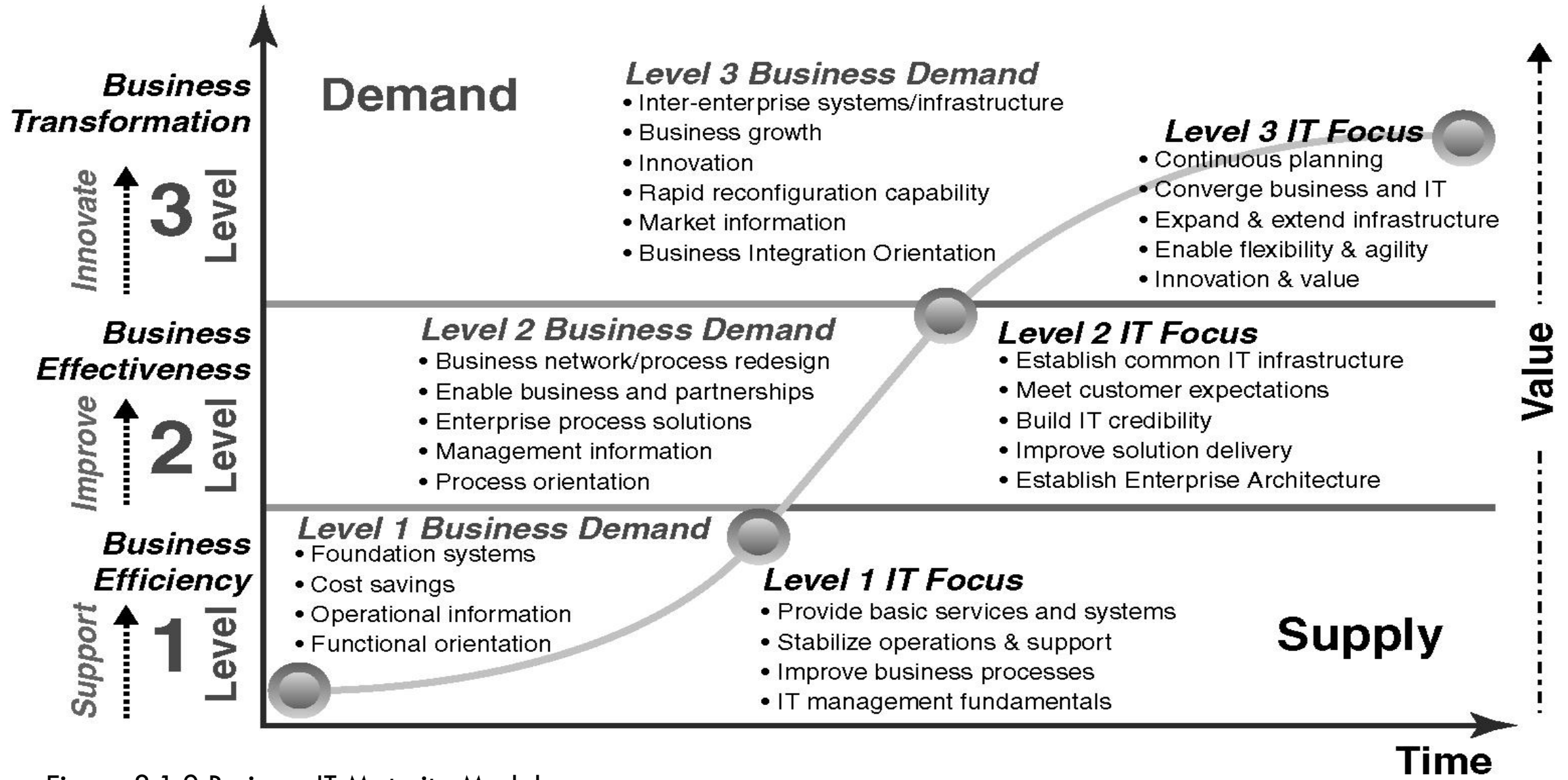


Figure 8.1.2 Business-IT Maturity Model.

Understanding the IT Organization

23

- IT organizations all **provide** services **to** their businesses at the **right time** and in the **right way** based on:
 - The **skills** and **capabilities** of their people.
 - The organizational **focus** of management.
- Firms differ in their IT activities because of:
 - Their organizational **goals**.
 - The firms' **size**.
 - The organizational **structure**.
 - The level of **maturity**.

What a Manager Can Expect From the IT Organization

24

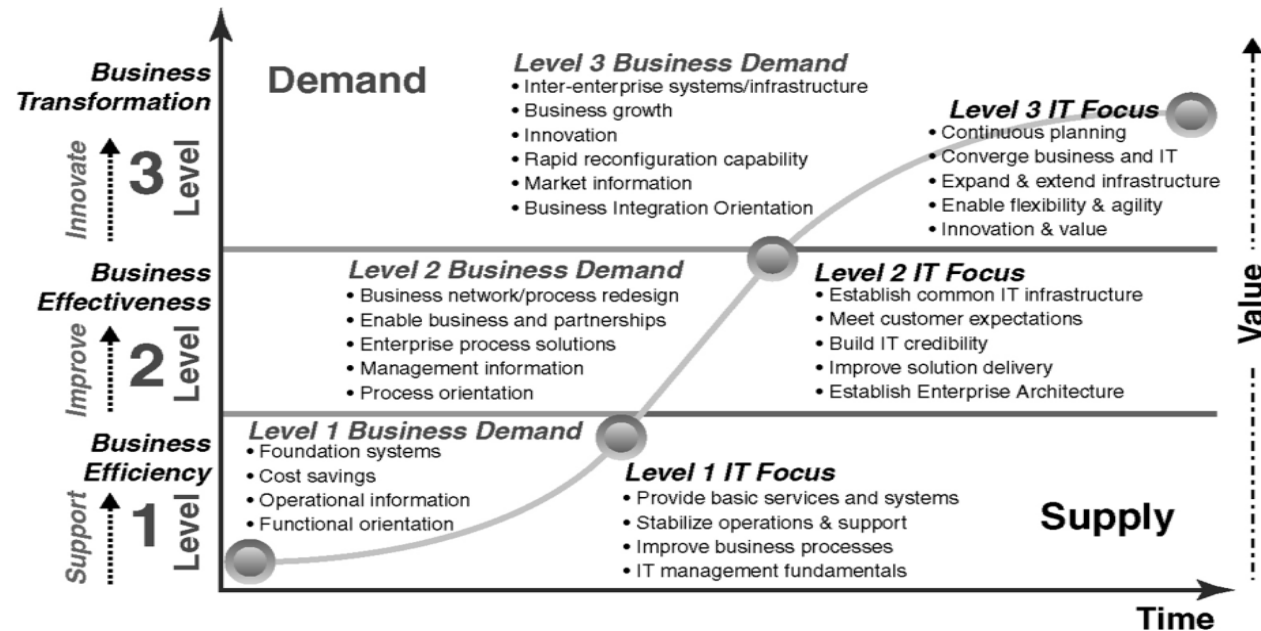
Activity	Maturity Levels	Activity	Maturity Levels
Developing and maintaining systems	1	Innovating current processes	2
Managing supplier and platform-related relationships	1	Establishing architecture platforms and standards	2
Managing data, information, and knowledge	1, 2	Promoting enterprise cybersecurity	2
Managing Internet and network systems	1, 2	Anticipating new technologies	3
Managing human resources	1	Participating in setting and implementing strategic goals	3
Operating the data center	1	Co-creating with ecosystem 3and platform partners	
Providing general support	1	Integrating the use of social IT	3
Planning for business discontinuities	1		

Figure 8.2 IT Organization Activities and Related Level of Maturity.

What a Manager Can Expect From the IT Organization

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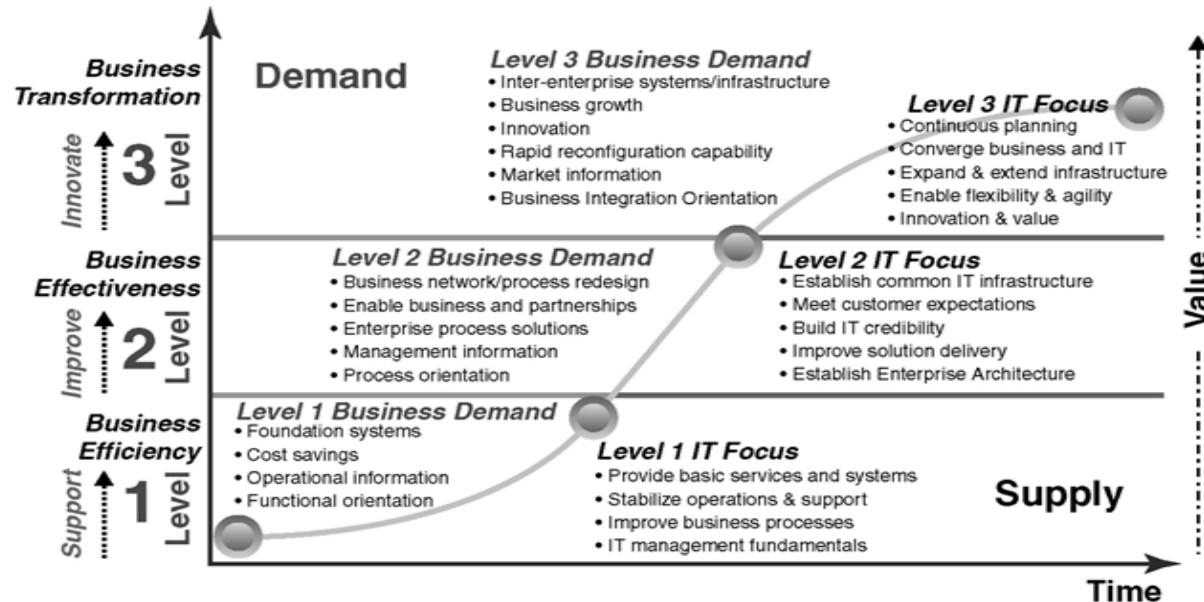
- Level 1 – The **functional** view predominates.
 - The IT organization is focused on the basic services needed to:
 - ✓ Generate cost savings.
 - ✓ Provide operational information needed.



What a Manager Can Expect From the IT Organization

26

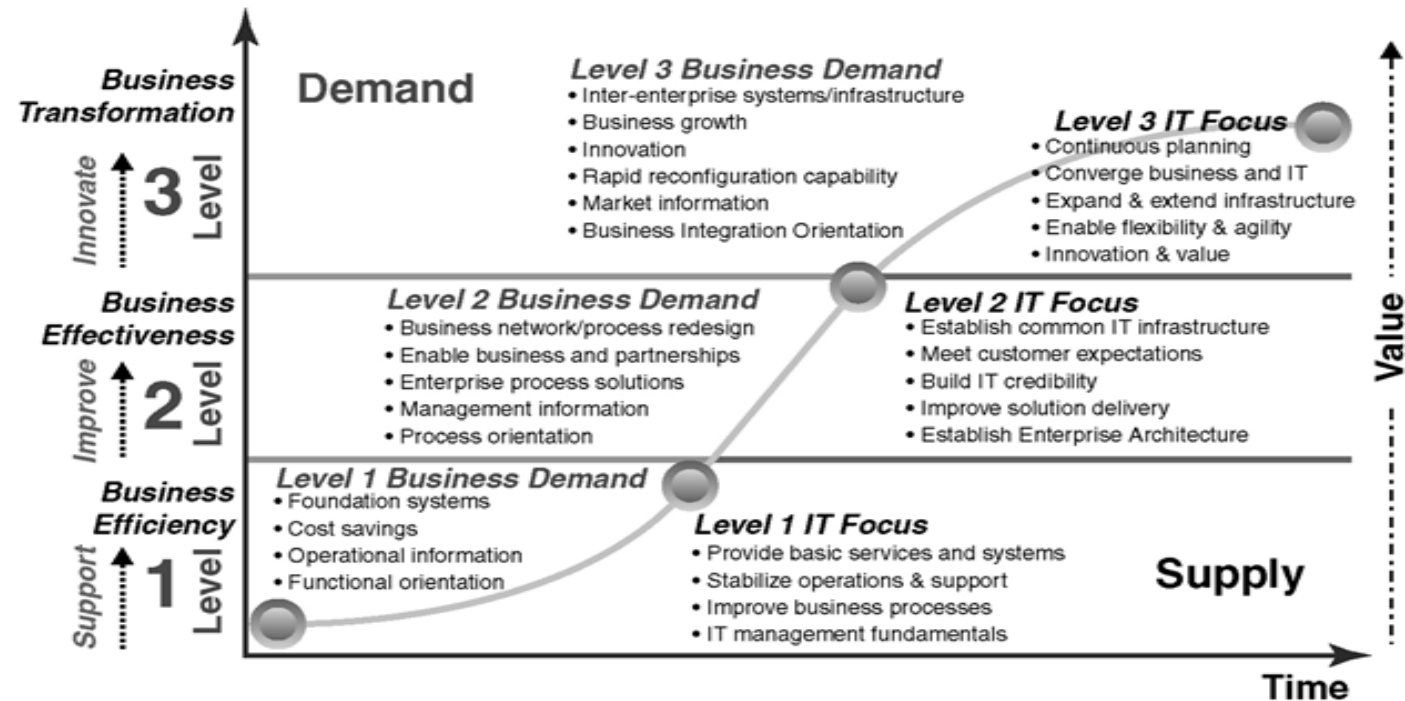
- Level 2 – Makes the business **effective**.
 - The IT organization adopts a process view to provide services of an integrated nature across the organization.
 - Information delivered by IS supports managerial decision making.
 - Enables business partnerships.



What a Manager Can Expect From the IT Organization

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- Level 3 - Focuses on **innovation**.
 - Provides support for strategic initiatives.
 - Helps spur innovation.



Activities in the IT Organization

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- The **scope** of activities in the IT organization is expanding.
 - **Integrating** social IT **into** the organization's business activities (e.g., wikis, forums, and social networks).
 - **Encouraging** new forms of collaboration.
 - **Creating** new processes to accomplish the firm's goals.

Activities in the IT Organization

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- Managing the **sourcing relationships**.
 - Identifying and working with vendors who provide services.
 - Traditional activities have been outsourced to vendors for decades.
 - ✓ Data center operations, network management, and system development and maintenance (including application design, development, and maintenance).
 - Outsourcing process management is also called **business process outsourcing**.

What the IT Organization Does Not Do

30

- The IT organization **does not** directly perform core business functions (e.g. selling, manufacturing, and accounting).
- Managers' lack of involvement in the design of systems turns over **control** of business operations.
- The IT organization **does not** typically design business processes.
- Partnerships **between** the general managers **and** IT professionals are important.
- The IT organization **does not** set business strategy.

Chief Information Officer (CIO)

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- The **most senior executive** in the enterprise:
 - **Responsible for** technology vision.
 - **Leadership** for designing, developing, implementing, and managing IT initiatives.
 - **Focus on** operating effectively in a constantly changing and intensely competitive marketplace.

Chief Information Officer (CIO)

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- Works with the executive team in strategy formulation processes.
- A **business technology strategist** or strategic business leader.
- Uses technology as the core tool in creating **competitive advantage** and aligning business and IT strategies.
- In the early days, the CIO was predominantly responsible for controlling costs and reported to the CFO.

Chief Information Officer (CIO)

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- Although the CIO's role is to guide the enterprise toward the future, this responsibility is frequently too great to accomplish alone.
- Many organizations recognize that certain strategic areas of the IT organization require more focused guidance.
- This recognition led to the creation of new positions in Figure 8.3.

CIO's Lieutenants

Title	Responsibility
Chief Technology Officer (CTO)	• Track emerging technologies. • Advise on technology adoption. • Design and manage IT architecture to ensure consistency and compliance.
Chief Knowledge Officer (CKO)	• Create knowledge management infrastructure. • Build a knowledge culture. • Make corporate knowledge pay off.
Chief Telecommunications Officer (CTO)	• Manage phones, networks, and other communications technology across entire enterprise.
Chief Network Officer (CNO)	• Build and maintain internal and external networks.

Figure 8.3.1 The CIO's Lieutenants (부하).

CIO's Lieutenants

Title	Responsibility
Chief Resource Officer (CRO)	• Manage outsourcing relationships.
Chief Information Security Officer (CISO)	• Ensure information management practices are consistent with security requirements.
Chief Privacy Officer (CPO)	• Establish and enforce processes and practices to meet privacy concerns of customers, employees, and vendors.
Chief Mobility Officer (CMO)	• Oversee and ensure the viable use of the mobile platforms and apps.
Chief Social Media Officer (CSMO)	• Maintain a social IT perspective that results in effectively implementing social media.

Figure 8.3.2 The CIO's Lieutenants (부장).

Building a Business Case

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- A **business case** is a structured document that lays out all the relevant information needed to make a go/no-go decision.
- The business case for an IT project is also a way to establish priorities for investing in different projects, an opportunity to:
 - **Identify** how IT and the business can deliver new benefits,
 - **Gain** commitment from business managers, and
 - **Create** a basis for monitoring the investment.
- Components of a business case in Figure 8.4.

Sections or Components	Descriptions
Executive summary	One- or two-page description of the overall business case document summarizing key points
Overview and introduction	Brief business background, the current business situation, a clear statement of the business problem or opportunity, and a recommended solution at a high level
Assumptions and rationale	Issues driving the proposal (e.g., operational, human resources, environmental, competitive, industry or market trends, or financial)
Project summary	High-level and detailed descriptions of the project; scope, objectives, contacts, resource plan, key metrics, implementation plan, and key success factors
Financial discussion and analysis	Overall summary followed by projected costs/revenues/benefits, financial metrics, financial model, cash flow statement, underlying assumptions, and total cost of ownership (TCO) analysis
Benefits and business impacts	Summary of business impacts followed by details on nonfinancial matters such as new business, transformation, innovations, competitive responses, organizational, supply chain, and human resource impacts
Schedule and milestones	- Entire schedule for the project with milestones and expected metrics at each stage; - If appropriate, can include a marketing plan and schedule
Risk and contingency analysis	Analysis of risks and ways to manage those risks, sensitivity analysis of scenarios, and interdependencies and the impact they will have on potential outcomes
Conclusion and recommendation	Primary recommendation and conclusions
Appendices	Backup materials not directly provided in the body of the document, such as detailed financial investment analysis, marketing materials, and competitors' literature.

Figure 8.4 Components of a Business Case.

Building a Business Case

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		Type of Business Change		
		Innovation (Do new things)	Improvement (Do things better)	Cessation (Stop doing things)
High ↑ degree of explicitness ↓ Low	Financial Benefits	Financial value can be calculated by applying a cost/price or other valid financial formula to a quantifiable benefit.		
	Quantifiable Benefits	There is sufficient evidence to forecast how much improvement/benefit should result from the changes.		
	Measurable Benefits	Although this aspect of performance is currently measured, or an approximate measure could be implemented, it is not possible to estimate how much performance will improve when changes are implemented.		
	Observable Benefits	By using agreed criteria, specific individuals or groups will use their experience or judgment to decide the extent the benefit will be realized.		

Figure 8.5.1 Classification Framework for Benefits in a Business Case.

Building a Business Case

39

		Type of Business Change		
		Innovation (Do new things)	Improvement (Do things better)	Cessation (Stop doing things)
High ↑ degree of explicitness ↓ Low	Financial Benefits	- Sales improved by \$250k - Costs decreased by \$50k after change		
	Quantifiable Benefits	- Converted 150 calls per day to chats - Reaching 200 more customers per day		
	Measurable Benefits	- Facebook page likes; number of chats - Customer satisfaction scores moved from 3.3 to 4.1 (out of 5)		
	Observable Benefits	- Busy chat operators - Busy Facebook page - Customers seem happier		

Figure 8.5.2 Sample of benefits in a business case for adding chat function linked from Facebook page.

Benefits	Innovation: Chat Function and Customer Support Forum	Improvement: Remodeled Facebook Page	Cessation (Stopping): Reduce Phone Support by 90%
Financial	- Fewer returns - Higher sales	Sales from redemption (saving) of special coupons by new customers	Overall costs reduced
Quantifiable	Shorter customer wait time	Number of new customers	Wait time for phone lines
Measurable	Higher customer satisfaction scores	Number of "shares" by new customers	Overall customer service satisfaction scores
Observable	Fewer complaints	Supportive comments on the page	Decrease in verbal complaints by phone-in customers

Figure 8.6 Benefit Examples of a Business Case.

IT Portfolio Management

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- IT investments should be managed as any other investment.
- Evaluate and approve IT investments as they relate to other potential investments of all kinds.
- Goals:
 - Pick the right mix of investments.
 - Invest in the most valuable IT initiatives.

Asset Classes

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- Weill and Aral say that there are four asset classes of IT investments.

Transactional systems	• Systems that streamline or cut costs on business operations	• Level 1 in BMM
Infrastructure systems	• The base foundation or shared IT services used for multiple applications	• Level 2 in BMM
Informational systems	• Any system that provides information used to control, manage, communicate, analyze or collaborate	• Level 2 in BMM
Strategic systems	• Any system used to gain competitive advantage in the marketplace	• Level 3 in BMM

Asset Classes

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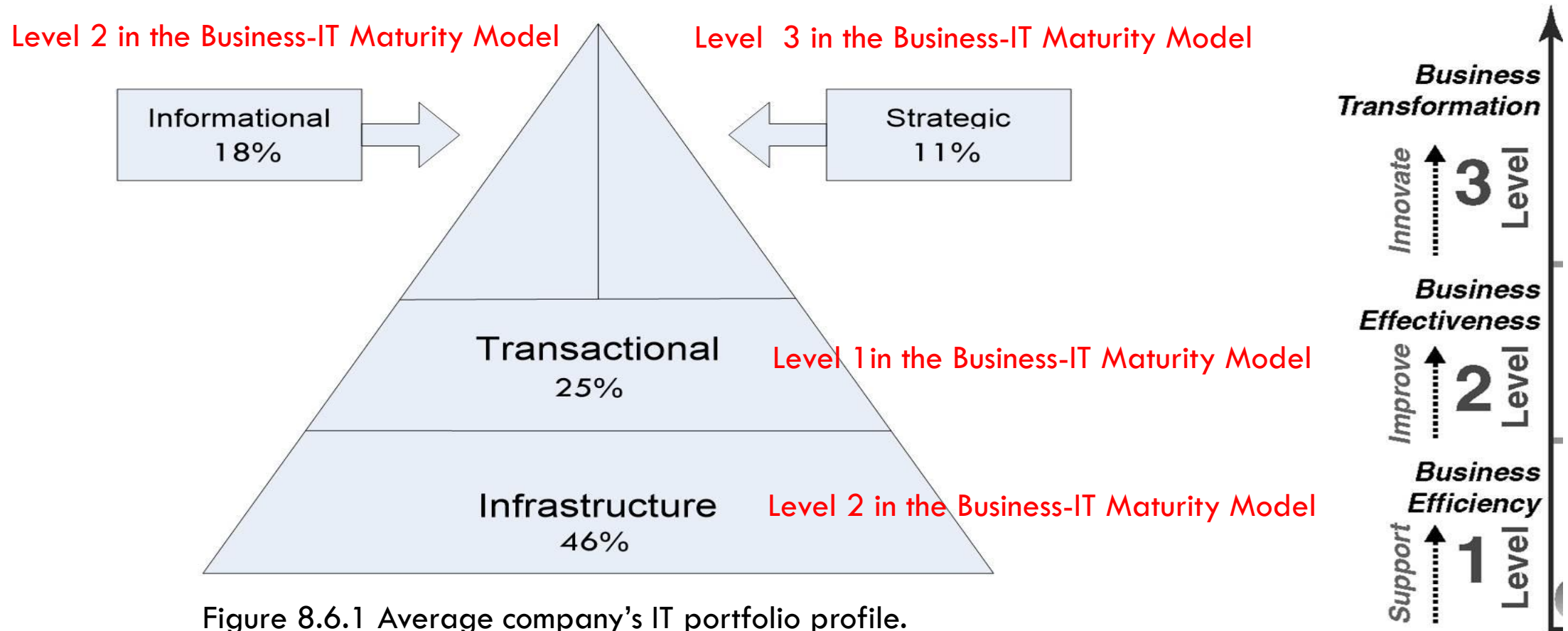


Figure 8.6.1 Average company's IT portfolio profile.

Asset Classes

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	Transactional Investments	Infrastructure Investments	Informational Investments	Strategic Investments
• Average Firm	25%	46%	18%	11%
• Cost Focus	27%	44%	18%	11%
• Agility Focus	24%	51%	15%	10%

Figure 8.6.2 Comparative IT portfolios for different business strategies.

Valuing IT Investments

45

- New IT investments are often justified in terms of monetary costs and benefits.
- **Soft benefits**, such as the ability to make future decisions, make it difficult to measure the payback (회수) of IT investment.
 - The systems are complex, and calculating the costs is an art -- not a science.
 - Calculating a payback period may be more complex than other types of capital investments.
 - Many times the payback can not be calculated because the investment is a necessity rather than a choice -- without any tangible payback.

Valuing IT Investments

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- IT managers need to learn to express benefits in a business-like manner such as ROI or increased customer satisfaction.
- Figure 8.7 shows the **valuation methods** used.

Valuation Method	Description
Return on Investment (ROI)	• $ROI = \frac{Revenue - Investment}{Investment}$
Net Present Value (NPV)	• Discount the costs and benefits for each year of the system's lifetime using present value factor $\frac{1}{(1+Discount\ rate)^{years}}$
Economic Value Added (EVA)	• $EVA = \text{net operating profit after taxes} \times \text{cost of capital}$
Payback Analysis	• Time that will lapse before accrued benefits overtake accrued and continuing costs
Internal Rate of Return (IRR)	• Return of the IT investment compared to the corporate policy on rate of return
Weighted Scoring Methods	• Costs and revenues/savings are weighted based on their strategic importance, accuracy/confidence, other opportunities

Figure 8.7 Financial Valuation Methods.

Monitoring IT Investments

48

- Ensure that the money spent on IT results in benefits for the organization.
- A common, accepted set of **metrics** must be created.
 - Metrics must be monitored and communicated to **senior management** and customers of the IT department.
 - Metrics are often financial in nature (e.g., ROI, NPV).

Monitoring IT Investments

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IT Metrics

- Logs of errors encountered by users
- End-user surveys
- User turnaround time
- Logs of computer and communication up/downtime
- System response time
- Percentage of projects completed on time and/or within budget

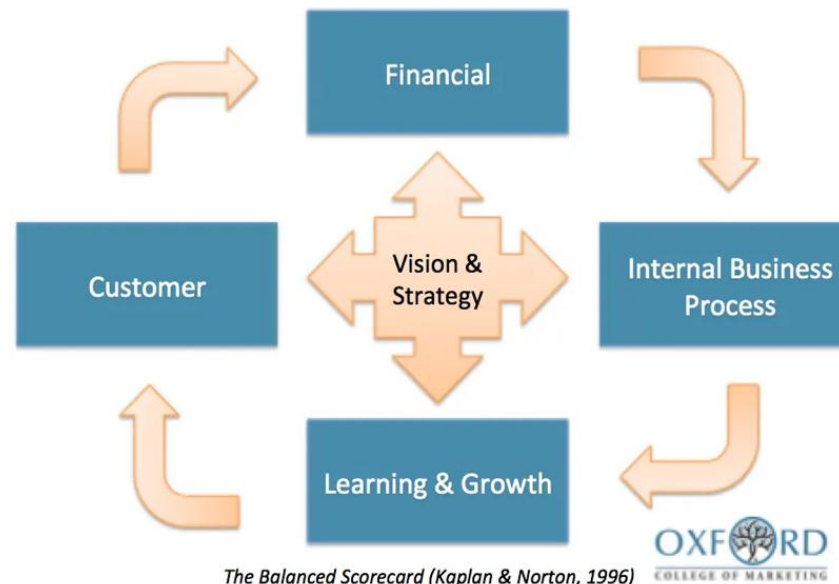
Business Metrics

- The number of contacts with external customers
- Sales revenue accrued from web channels
- New business leads generated

The Balanced Scorecard

50

- Two methods for communicating metrics are **scorecards** and **dashboards**.
- Robert Kaplan and David Norton developed the balanced scorecard.
 - Focuses attention on the organization's value drivers -- which include, but are not limited to, financial performance.

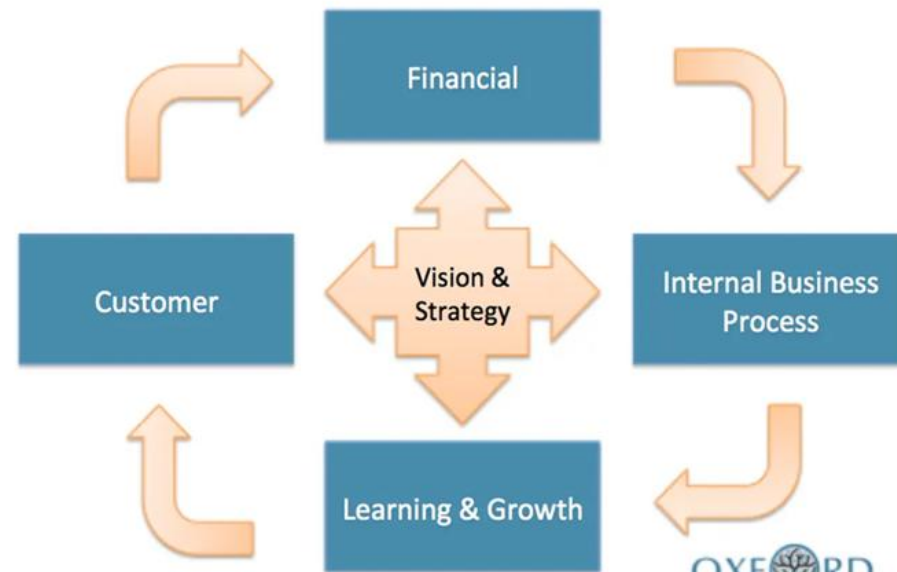


The Balanced Scorecard (Kaplan & Norton, 1996)

The Balanced Scorecard

51

- Companies use it to assess the full impact of their **corporate strategies** on their customers and workforce as well as their financial performance.
- This methodology **allows** managers **to** look at the business from four perspectives in Figure 8.8.
 - Customer
 - Internal business process
 - Learning & Growth
 - Financial



The Balanced Scorecard (Kaplan & Norton, 1996)

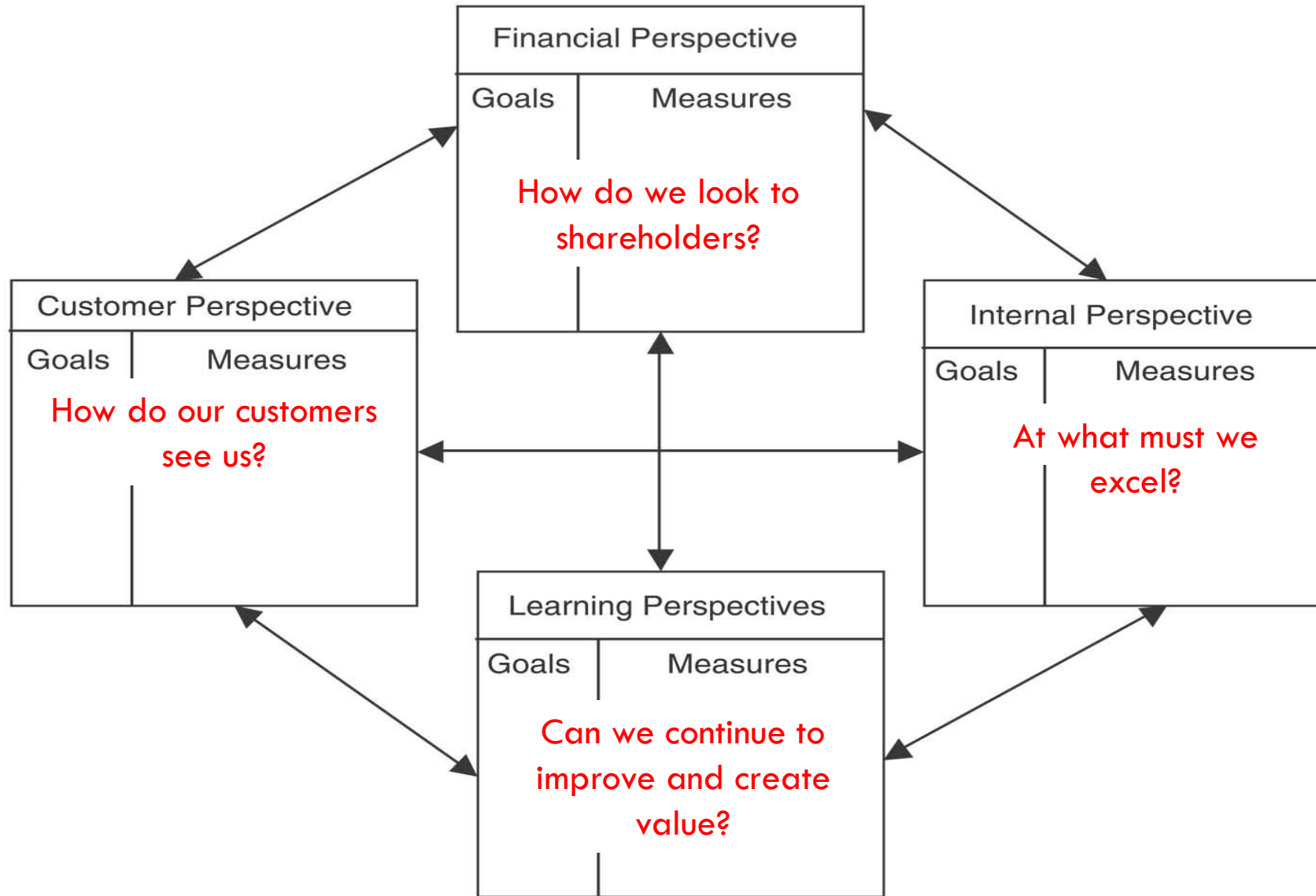


Figure 8.8 The Balanced Scorecard Perspectives.

The IT Balanced Scorecard

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- Using it within the MIS department helps senior IS managers.
 - Understand their organization's performance.
 - Measure it in a way that supports its business strategy.
- Linked to the corporate scorecard.
 - By ensuring that the measures used by IT are those that support the corporate goals.
- Balanced Scorecard Applied to IT Departments in Figure 8.9.

Dimension	Description	Example IT Measures
Customer perspective	• <i>How do customers see us?</i> • Measures that reflect factors that really matter to customers	• Impact of IT projects on users • Impact of IT's reputation among users • User-defined operational metrics
Internal business process perspective	• <i>What must we excel at?</i> • Measures of what the company must do internally to meet customer expectations	• IT process metrics • Project completion rates • System operational performance metrics
Learning perspective	• <i>Can we continue to improve and create value?</i> • Measures of the company's ability to innovate, improve, and learn	• IT R&D • New technology introduction success rate • Training metrics
Financial perspective	• <i>How do we look to shareholders?</i> • Measures to indicate contribution of activities to the bottom line	• IT project ROI • NPV • IRR • Cost/benefit • TCO • ABC

Figure 8.9 Balanced Scorecard Applied to IT Departments.

IT Balanced Scorecard

55

- FirstEnergy, a multibillion-dollar utility company, is a good example of how the IT balanced scorecard can be used.
- One of its strategic, albeit (even though, although) nonfinancial, goals was to create "raving fans" among its customers.
- The MIS group interpreted "raving fans" to mean satisfied internal customers.



IT Balanced Scorecard

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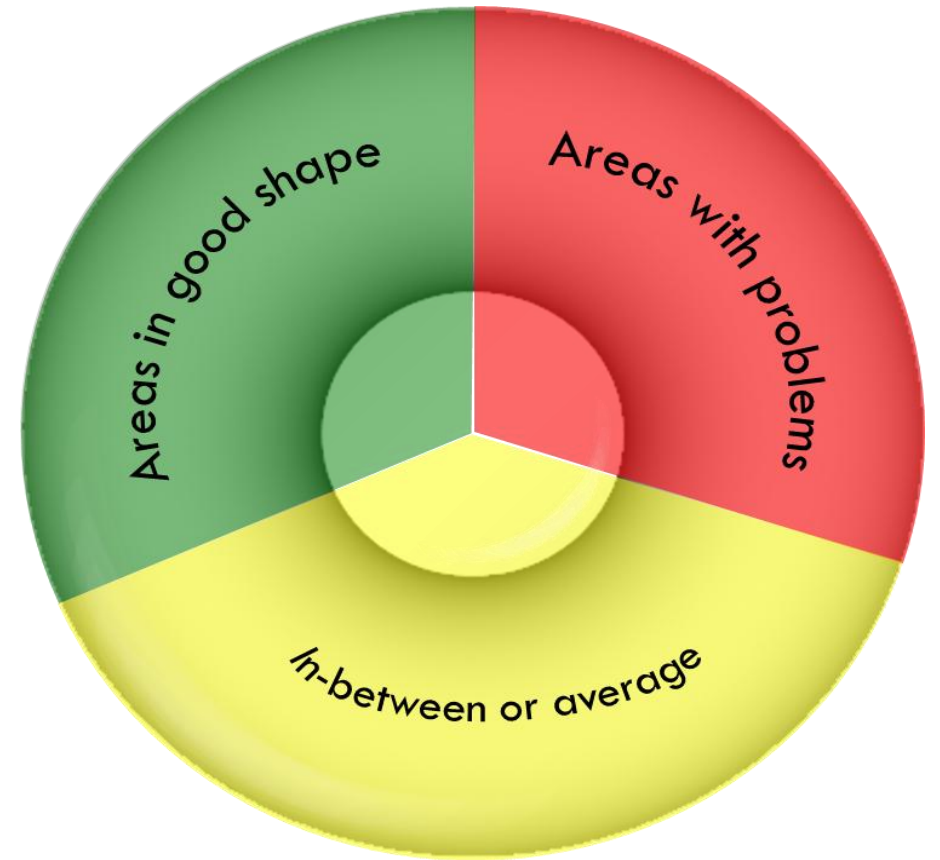
- It used three metrics to measure the performance toward this goal:
 - Percentage of projects completed on time and on budget.
 - Percentage of projects released to the customer by agreed-on delivery date.
 - End-of-project customer satisfaction survey results.



IT Dashboards

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- Snapshot of metrics at a given point in time (often “right now”).
 - Offer “at a glance (**with a quick look**)” idea of how things are going.
 - Often colors depict conditions:
 - Areas with problems (red)
 - Areas in good shape (green)
 - In-between or average (yellow)
- **Snapshot: a quick view or a small amount of information that tells you a little about what someone or something is like**



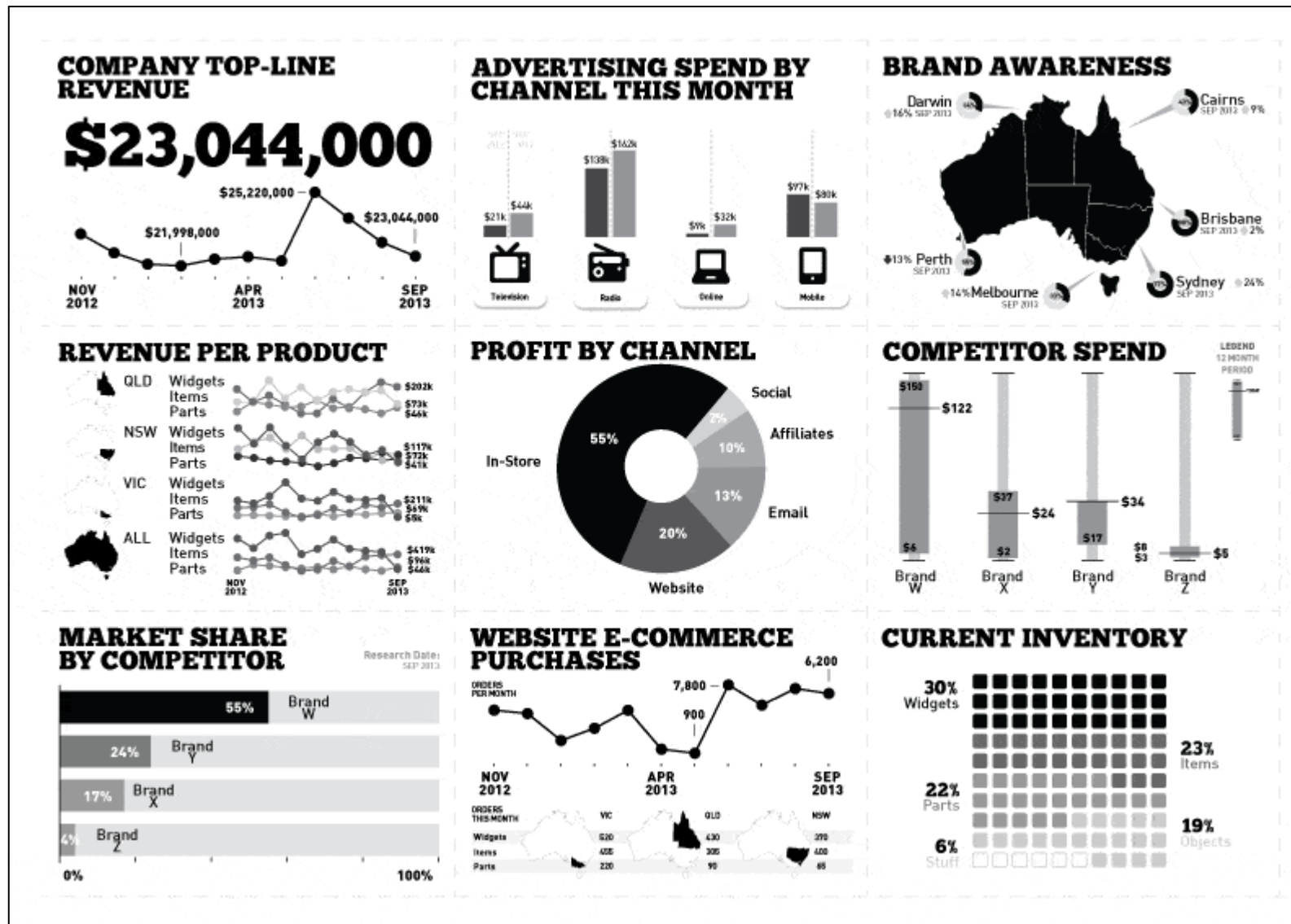


Figure 8.10.1 Example of an Executive Dashboard.

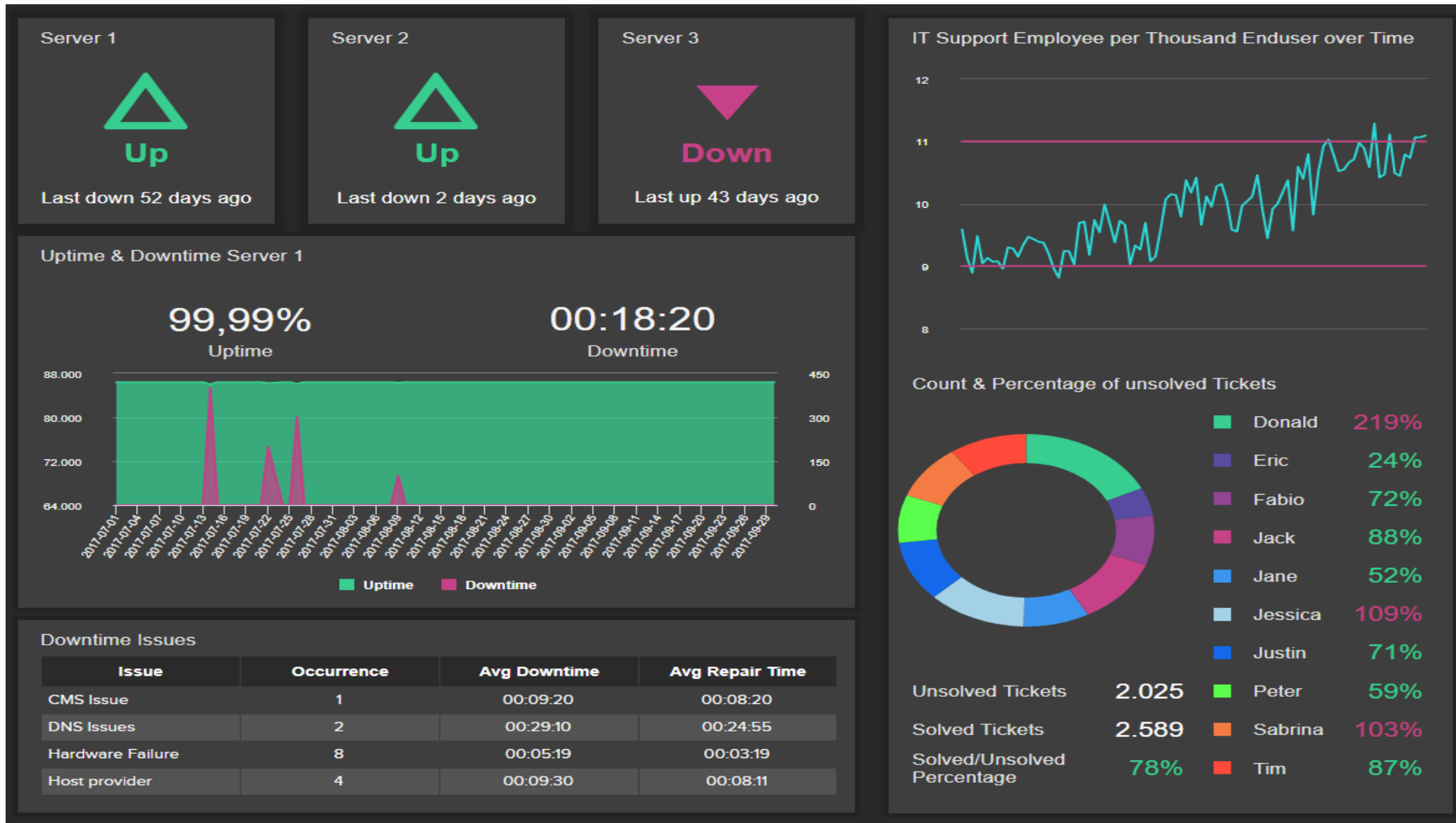


Figure 8.10.2 IT Dashboards - Templates & Examples For IT Management.

Four Types of IT Dashboards

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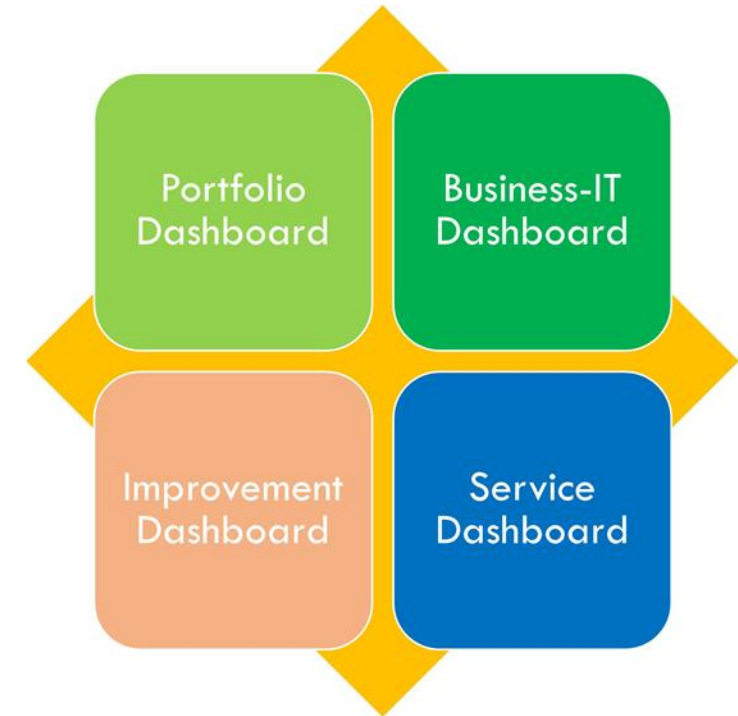
- **Portfolio dashboards** help senior IT leaders manage IT projects.
 - These dashboards show senior IT leaders the status, problems, milestones, progress, expenses, and other metrics related to specific projects.
- **Business-IT dashboards** show relevant business metrics and link them to the IT systems that support them.
 - The metrics on the balanced scorecard provide a sample of the type of metrics followed by this dashboard.



Four Types of IT Dashboards

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- A **service dashboard** is geared toward (~에 맞추다, ~ 계획에 맞게 조정하다) the internal IS department, showing important metrics about the IS such as up time, throughput (처리량), service tickets, progress on bug fixes, help desk satisfaction, and so on.
- An **improvement dashboard** monitors the three to five key improvement goals for the IT group.
 - Like the portfolio dashboard, the metrics to be monitored are based on the projects undertaken, but unlike the other dashboards, this one is geared toward monitoring progress toward important goals of the IT organization itself.



Dashboard Examples and Templates

Over 60 business dashboards for Executives, Sales, Marketing, Social Media, and more. Check out this gallery to get inspired in building your own today!

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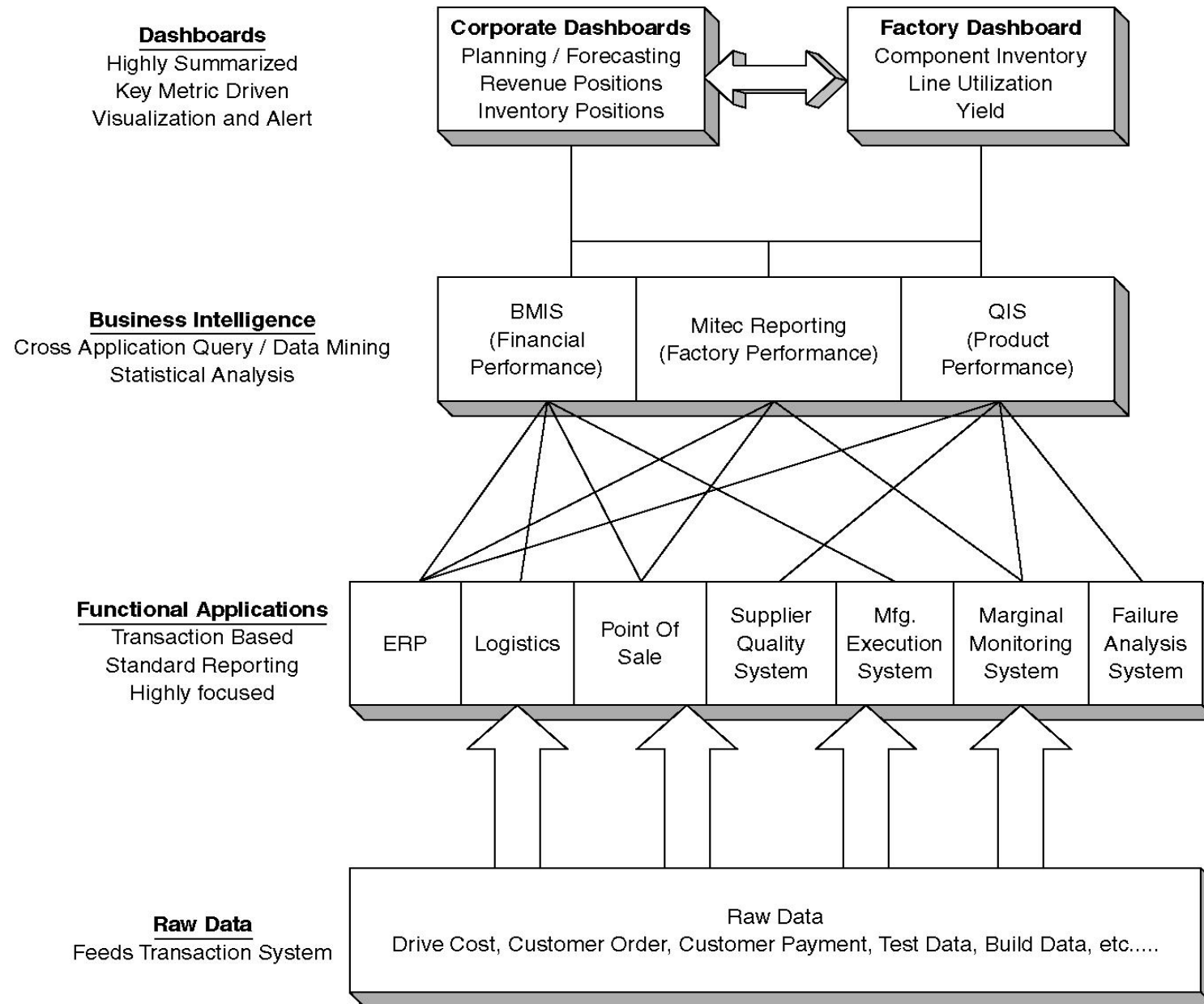
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Figure 8.10.3 Dashboard Examples and Templates.



The architecture of a sample dashboard for Western Digital, a \$3-billion global designer and manufacturer of high-performance hard drives for PCs, networks, storage devices, and entertainment systems

Figure 8.11 Example Architecture of a Dashboard.

Funding IT Resources

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- Who pays for IT? Users, IT department, Corporate, etc.
- The three main funding methods are **chargeback**, **allocation**, and **corporate budget**.
 - Both chargeback and allocation methods distribute the costs back to the businesses, departments, or individuals within the company.
 - In corporate budgeting, costs are not linked directly with any specific user or business unit; costs are recovered using corporate coffers (**money/cash box**).

Chargeback

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- IT costs are recovered by charging individuals, departments, or business units based on **actual usage** and **cost**.
- The IT organization collects usage data on each system it runs.
 - Rates for usage are calculated based on the actual cost to run the system and are billed out on a regular basis.



Chargeback

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- When the IT organization wants to recover administrative and overhead costs using a chargeback system, costs are built into rates charged for each of the services.
 - **Popular** because they are viewed as the most equitable way to recover IT costs.
 - **Expensive** to create and manage.
 - **Most appropriate** when there is a wide variation in usage among users or when actual costs need to be accounted for by the business units.

Allocation

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- **Allocation funding method** recovers costs based on something other than usage such as revenues, login accounts, or number of employees.
- Simpler to implement and apply each month compared to the chargeback mechanism.
- The rate charged is often **fixed** at the beginning of the year.
- Two main advantages:
 - The level of detail required to calculate the allocations is much less.
 - ✓ Leads to cost savings.
 - Charges from the IT organization are predictable.
 - ✓ Generates far less frequent arguments from the business units.

Allocation Mechanisms

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- Two major complaints about allocation systems:
 - The **free-rider** problem.
 - ✓ A large user of IT services pays the same amount as a small user.
 - Deciding the basis for allocating the costs.
 - ✓ Choosing the number of employees over the number of desktops or other basis is a management decision.
- Allocation mechanisms work well when a corporate directive (**지시, 명령**) requires use of this method and when the units agree on the basis for dividing up the costs.
- A **follow-up** (“true-up”) process is needed at the end of the fiscal year.
 - The total IT expenses are compared to total IT funds recovered.
 - Extra funds are given back to the business units.

Corporate Budget

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- With the corporate budget funding method, the costs fall to the corporate bottom line rather than levying (demand) charges on specific users or business units.
- bottom line
1. the most important part of something, the most important thing to consider
 2. the final result or outcome
 3. a company's profits or losses



Corporate Budget

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- Corporate budget advantages:
 - Relatively simple method for funding IT costs.
 - Requires no calculation of prices of the IT systems.
 - Bills are not generated on a regular cycle to the businesses.
 - Concerns are raised less often.
 - IT managers **control** the entire budget.
 - Control the use of the funds.
 - Encourages the use of new technologies because learners are not charged for exploration and inefficient system use.

Corporate Budget

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- Corporate budget drawbacks:
 - All IT expenditures are subjected to the **same** process as all other corporate expenditures -- the budgeting process.
 - ✓ One of the most stressful events of the year.
 - ✓ Everyone is competing for scarce funds.
 - When business units do not get billed, it is hard to control usage.
 - ✓ The IT group may feel less accountable.
 - ✓ The IT organization may be less end-user or customer oriented.

Funding Method	Description	Why do it?	Why not do it?
Chargeback	Charges are calculated based on actual usage.	Fairest method for recovering costs since it is based on actual usage.	Must collect details on usage; often expensive and difficult.
Allocation	Expenditures are divided by non-usage basis (revenues, headcount, etc.).	Less bookkeeping for IT.	- Users can question rates & basis of allocation - Free riders
Corporate Budget	Corporate allocates funds to IT in annual budget - to general P&L.	- No billing to the businesses. - No rates to compute. - Encourages use of new technologies.	- Have to compete with all other budgeted items for funds. - Potential for overspending.

Figure 8.12 Comparison of IT Funding Methods

How Much Does it Cost?

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- The three major IT funding approaches are designed to **recover** the costs of building and maintaining IS.
- The goal is to cover the costs, not to generate a profit.
- The most basic method for calculating the costs of a system is to add the costs of all the components including:
 - Hardware, Software, Network, People involved
- IT organizations calculate the initial costs and ongoing maintenance costs in this way.

Direct and Indirect Costs

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- Traditional accounting methods account for (설명하다, 처리하다) **direct** and **indirect** costs.
- **Direct costs** can be clearly linked to a particular process or product.
 - e.g., components used to manufacture the product, assembler's wages for time spent building the product, etc.
- **Indirect costs** are the overhead costs.
 - e.g. the electric bill, the salary of administrative managers, the expenses of administrative function, the wages of the supervisor overseeing the assembler, the cost of running the factory, the maintenance of machinery used for multiple products, etc.

Activity Based Costing (ABC)

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- The allocation process can be cumbersome (번거로운) and complex.
 - A source of trouble for many organizations.
- Calculates costs by counting the **actual activities** that go into making a specific product or delivering a specific service.
- **Activities** are processes, functions, or tasks that occur over time and produce recognized results.
- Activities are the common denominator **between** business process improvement **and** information improvement across departments.
- ABC **calculates** the amount of **time** that system was spent supporting a particular activity and **allocates** only that cost to that activity.
 - Charges all costs to “profit centers” instead of to “cost centers.”

Total Cost of Ownership

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- When a system is proposed and a business case is created to justify the investment, the decision is often made on **incomplete information**.
- **Total cost ownership (TCO)**: One technique used to calculate a more accurate cost that includes all associated costs.
 - Rapidly becoming the industry standard.
 - Gartner Group introduced TCO in the late 1980s to calculate PC-based IT infrastructures.



Total Cost of Ownership

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- TCO looks beyond initial capital investments.
 - Includes costs associated with technical support, administration, training, and system retirement.
- TCO estimates annual costs **per user** for each potential infrastructure choice and then totals them.
- TCO provides the best investment numbers to compare with financial return numbers when analyzing the net returns on various IT options.

Total Cost of Ownership

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- A major IT investment is for **infrastructure**.
 - Hardware, software, network, and data categories to organize the TCO components the manager needs to evaluate.
 - The manager can assess infrastructure components at a medium level of detail and categorically allocate “softer” costs like administration and support.



TCO Component Breakdown – Hardware and Software

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- The TCO framework for the **hardware** category includes computing platforms and peripherals.
- The components listed are somewhat arbitrary.
 - Highly unusual that every user possesses every component.
 - For shared components, such as servers and printers, TCO estimates should be computed per component and then divided among all users who access them.
 - When only certain groups of users possess certain components, it is wise to segment the hardware analysis by platform.

TCO Component Breakdown – Hardware and Software

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- **Soft costs**, such as technical support, administration, and training, are easier to estimate than they appear.
- These calculations can be broken down (Figure 8.13).
- The final soft cost, informal support, is important but may be harder to pin down.



Soft Cost Areas	Example Components of Cost	Source
Technical support	• Hardware phone support	• Call center
	• In-person hardware troubleshooting	• IT operations
	• Hardware hot swaps	• IT operations
	• Physical hardware repair	• IT operations
	➤ Total cost of technical support	
Administration	• Hardware setup	• System administrator
	• Hardware upgrades/modifications	• System administrator
	• New hardware evaluation	• IT operations
	➤ Total cost of administration	
Training	• New employee training	• IT operations
	• Ongoing administrator training	• Hardware vendor
	➤ Total cost of training	
	❖ Total soft costs for hardware	

Figure 8.13 Soft Cost Considerations

➤ hot swaps: 컴퓨터의 전원이 연결된 상태로 부품을 수리[교체]하다

TCO Component Breakdown – Informal Support

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- Managers want to analyze the costs of **informal support** for two reasons:
 - The costs -- both in salary and in opportunity.
 - The quantity of informal support activities in an organization provides an indirect measure of the **efficiency** of its IT support organization.
- The formal support organization should respond with sufficient promptness (신속) and thoroughness (철저) to discourage all but (almost) the briefest informal support transactions.
- Putting dollar values on informal support may be a challenge.
- Managers want to gauge the relative potential of each component option to affect the need for informal support.

TCO as a Management Tool

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- TCO:
 - Tool for evaluating which **infrastructure** components to choose.
 - Help managers understand how infrastructure costs break down.
- **Labor costs** associated with an IT infrastructure far outweigh the actual capital investment costs.
 - TCO provides the fullest picture of where managers spend their IT dollars.
- TCO results can be evaluated over time against **industry standards**.

TCO as a Management Tool

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- TCO studies assist in decisions about budgeting, resource allocation, and organizational structure.
 - The cost of implementing TCO can be a detriment (**damage**) to the program's overall success.
- Both ABC and TCO are complex approaches.
 - Require significant effort to determine the costs to use in the calculations.
- Managers must **weigh** the benefits of using these approaches **with** the costs of obtaining reliable data.