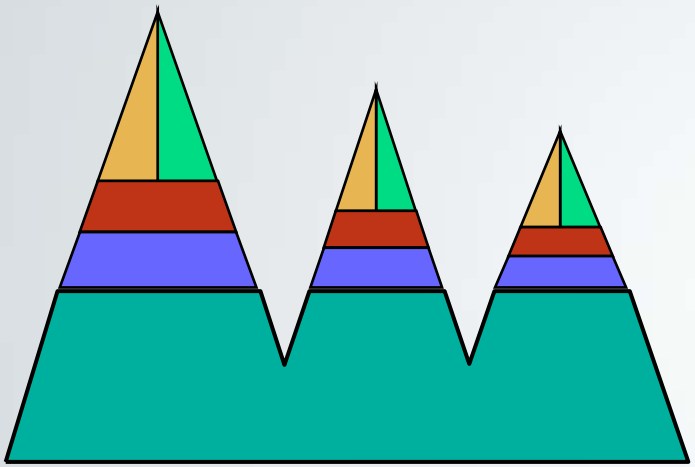
15.571 Generating Business Value from Information Technology
Spring 2009

Rethinking IT Investments as a Portfolio & IT Savvy



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- TD Bank
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- Wal-Mart, Inc.
- World Bank

CISR's Mission

- Founded in 1974; CISR has a strong track record of practice-based research on how firms manage & generate business value from IT
- Research is disseminated via electronic research briefings, working papers, research workshops & exec. ed. programs including http://mitsloan.mit.edu/cisr/education.php

2009 CISR Research Projects

The View from the Top: IT and Business Value

- **Achieving Superior Business Value from IT —A Single Framework of What Matters**
- **Communicating Effectively about IT Value**
- **Maturing and Globalizing IT Governance**

Building and Leveraging IT's Assets

- **Managing Business Experiments: Web-based Innovations in Collaboration**
- **Learning from IT Projects: Effective Post-Implementation Reviews**
- **Benchmarks for IT Decision Making**

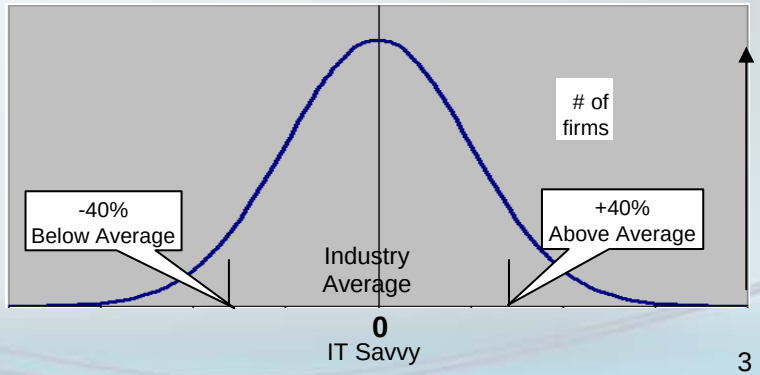
Managing Digitized Organizations

- **Leading the Transition to the Digitized Platform**
- **Designing and Managing Shared Services**
- **Managing the Information Explosion**
- **Making Sense of "the Cloud"**

Rethinking IT Investments as IT Portfolio

Based on proven and familiar principles of financial portfolio management

- Four management objectives for investing in IT
- Creates an IT portfolio with four asset classes
- Each asset class has different risk return profiles
- The role of senior management is to align the IT portfolio to strategy and balance for risk and return
- IT Savvy enterprises can get up to 40% more bottom-line value per IT dollar*
  - Self-assessment



***IT Savvy = enterprise's ability to gain above industry average returns from IT by better management.**

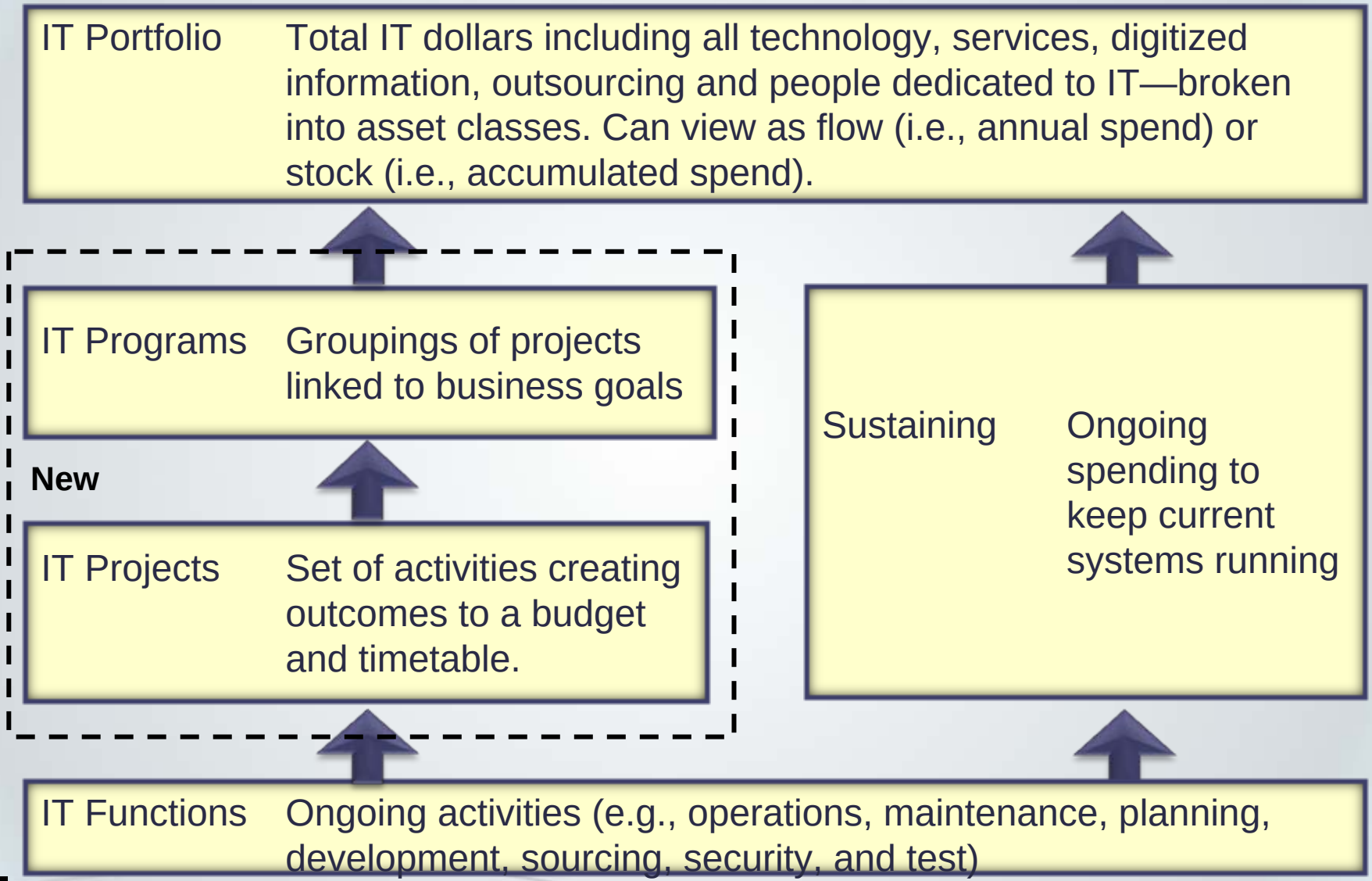
Why We Need IT Portfolio Management[1]

"Times they are changin' ..."

- Relentless cost reduction—reweighting to 25% of IT Portfolio
- Pressure on value demonstration—firms with above average IT spending and IT Savvy had net margins 20% above industry median
- Profitability via sharing—firms with above average percentage of shared applications and IT Savvy have ROA 30% above industry median
- Time to market—firms with above average IT infrastructure spend and IT Savvy grew at three percentage points higher than their industry average
- Integrating strategy and IT
  - Not fragmented, uncoordinated investments

[1] Analysis: Peter Weill and Stephanie L. Woerner of 2006 MIT SeeIT/CISR survey of 329 matched with publicly available firm performance data. NSF grant number IIS-0085725.

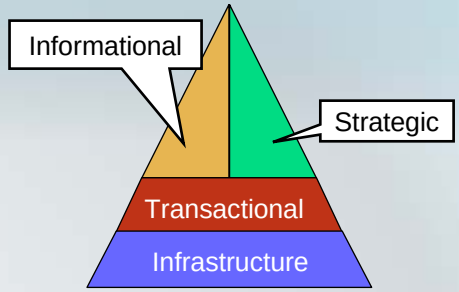
What's In the IT Portfolio ?



[1]Firms who spend more of their total IT spend on new initiatives (dashed box) had statistically significantly higher industry adjusted growth and margins – MIT CISR study, July 2008 (95 firms).

Source: MIT CISR study of 1508 firms in late 2007 (Weill & Woerner).

Firms Have an IT Portfolio with Four Asset Classes



Transactional IT: automates processes, cuts costs or increases the volume of business a firm can conduct per unit cost, e.g., order processing, bank cash withdrawal, billing, accounting and other repetitive transaction processing functions

Informational IT: provides information for managing, accounting, reporting and communicating internally and with customers, suppliers and regulators, e.g., decision support, accounting, planning, control, sales analysis, customer relationship and Sarbanes-Oxley reporting systems

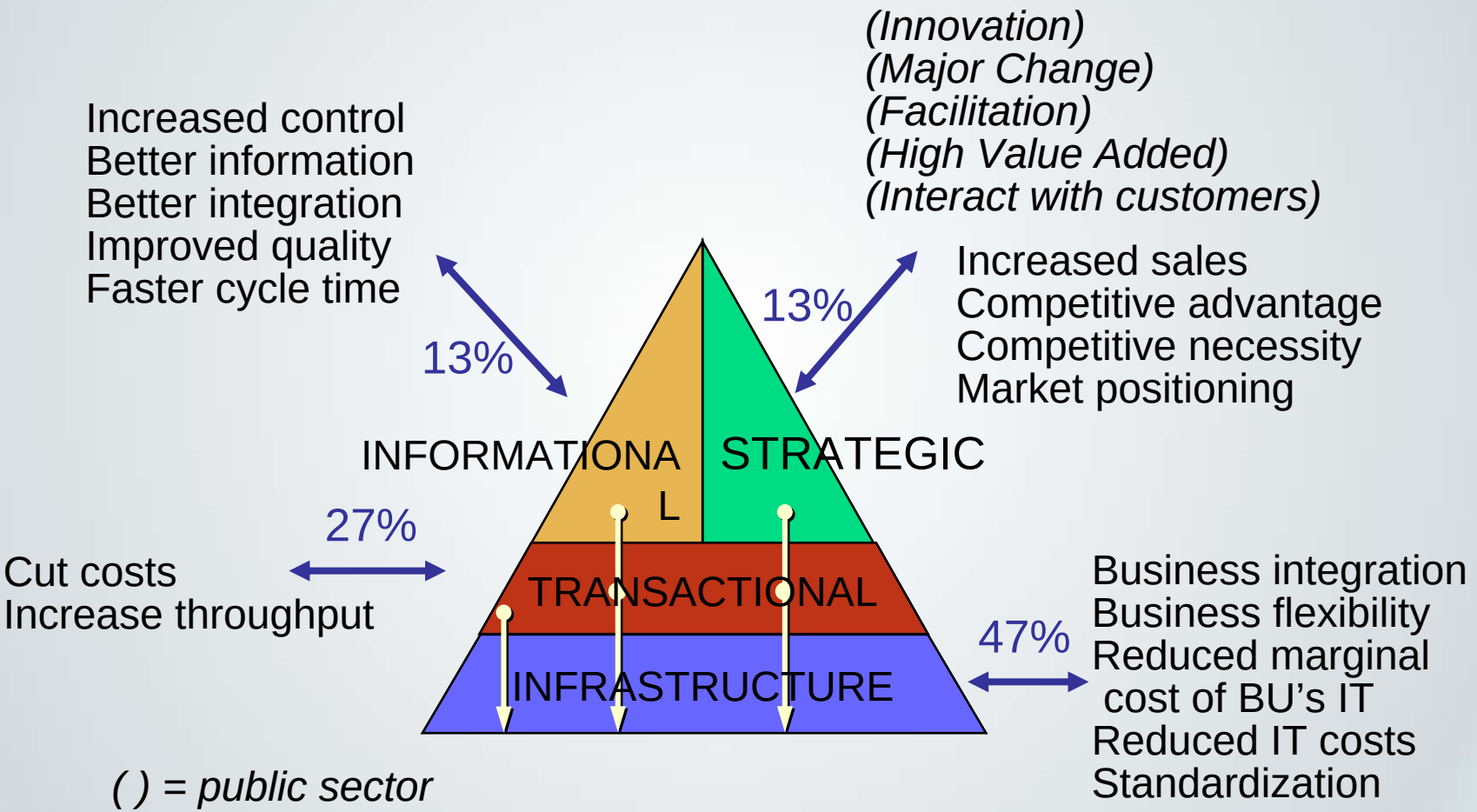
Strategic IT: supports entry into a new market, development of new products or capabilities, and innovative implementations of IT. Example: ATMs

Infrastructure IT: provides the foundation of shared IT services (both technical and human) used by multiple applications, e.g., servers, networks, laptops, shared customer databases, help desk, application development

A project may be any combination of all four.

Source: P. Weill & S. Aral,"Generating Premium Returns on Your IT Investments," *MIT Sloan Management Review,* Vol. 47, No.2, Winter 2006.

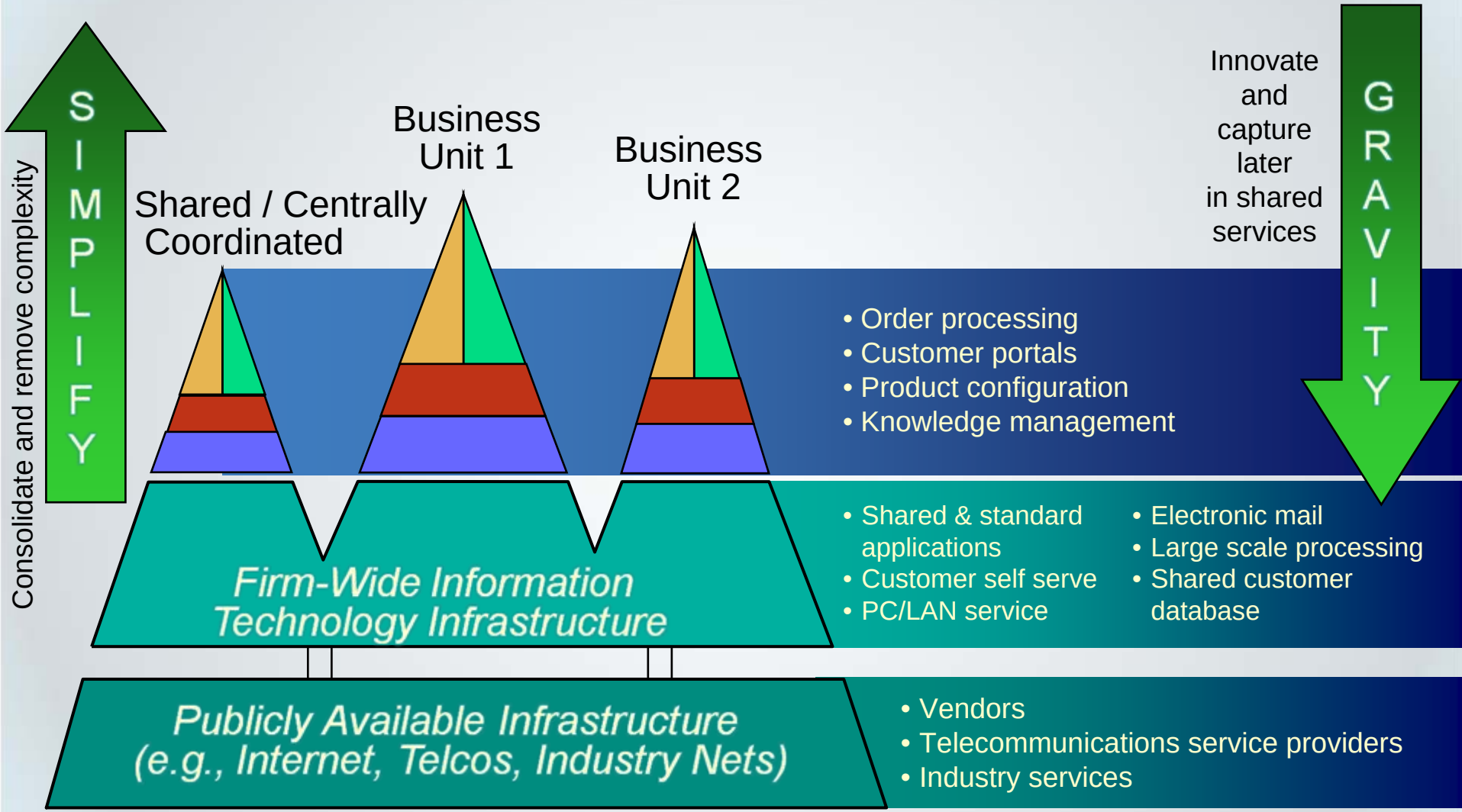
Rethinking IT as an Investment Portfolio
— Four Different Asset Classes



Source: Framework from P. Weill & M. Broadbent, *Leveraging the New Infrastructure: How market leaders capitalize on IT,* Harvard Business School Press, 1998. Data: Percentages are 2007 total $IT spending (operations+ depreciation) from 1113 firms, from MIT CISR Survey.

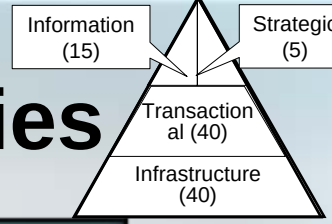
Infrastructure Has Multiple Layers

Where to locate infrastructure & systems capabilities?



Updated from : P. Weill, M. Subramani & M. Broadbent, "Building IT Infrastructure for Strategic Agility," *MIT Sloan Management Review*, Vol. 44, No.1, Fall 2002.

2007 IT Portfolios in Different Industries



	Financial Services[4]	Manufacturing[5]	Consumer[6]	Distribution & Infra[7]	Services[8]	All For-Profits	
2007 Total $IT as a Percent of Firm Revenues[1] (Number of Firms)	5.5% (184)	5.1% (131)	4.2% (78)	7.8% (75)	6.4% (88)	5.8% (606)	
$IT 2007[1]	14% 13% 28% 45%	13% 13% 27% 47%	13% 13% 27% 47%	13% 13% 26% 48%	14% 13% 27% 47%	13% 13% 27% 47%	
(Number of Firms)	(327)	(245)	(163)	(136)	(166)	(1113)	IT Investment 2001[3]
$IT 2006[2]	18% 10% 25% 46%	17% 11% 25% 47%	18% 10% 24% 48%	20% 11% 27% 42%	17% 10% 25% 48%	18% 11% 25% 46%	20% 13% 13% 54%
(Number of Firms)	(87)	(167)	(157)	(91)	(101)	(625)	(140)

[1] MIT CISR 2007 survey of 1508 firms with Dr. Howard Rubin (Weill and Woerner). $IT=operating cost + depreciation. Firm-wide costs include all outsourcing and phone. Outliers greater than 4.7 standard deviations from the median were removed.

[2] MIT CISR/SeeIT 2006 survey of 625 firms. (NSF Grant Number IIS-0085725).

[3] MIT CISR/SeeIT survey of 140 enterprises for 2001.

[4] Banking, Financial Services, & Insurance.

[5] Manufacturing, High Tech, Aerospace, Construction, Electronics, Chemicals, Energy, Mining, and Agriculture

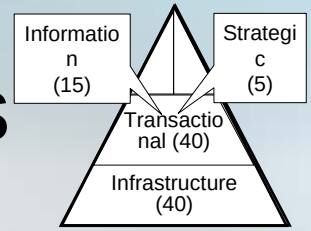
[6] Retail, Travel & Food, Consumer Services, Health Care, Pharmaceuticals, & Media

[7] Telecom, Utilities, Transportation, and Logistics

[8] IT & Software, IT Services, and Professional Services.

Further reading: "Generating Premium Returns on Your IT Investments," P. Weill & S. Aral, *MIT Sloan Management Review,* Vol. 47 No. 2, Winter 2006.

2007 IT Portfolios in Financial Services

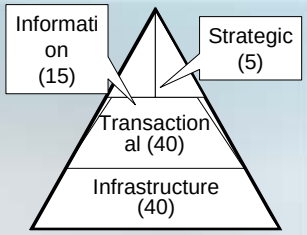


	Banks	Financial Services	Insurance	Combined	All For-Profits
2007 Firm-wide $IT as a Percent of Revenues[1] (N=Number of Firms)	4.8% (52)	8.8% (52)	3.9% (80)	5.5% (184)	5.8% (606)
IT Investment 2007[1]	14% / 13% / 27% / 46%	14% / 13% / 26% / 47%	14% / 14% / 28% / 44%	14% / 13% / 28% / 45%	13% / 13% / 27% / 47%
(N)	(82)	(117)	(128)	(327)	(1113)
Percent of 2007 $IT Run Current Systems (N)	64% (41)	67% (53)	67% (54)	66% (148)	66% (488)
Percent of 2007 $IT Centralized (N)	71% (87)	72% (130)	73% (140)	72% (357)	72% (1217)
Percent 2007 $IT Charged Back (N)	52% (87)	53% (130)	52% (140)	52% (357)	53% (1217)
Percent of 2007 $IT Shared Services (N)	10% (86)	9% (94)	9% (93)	9% (250)	9% (814)
Percent of 2007 $IT Outsourced (N)	23% (21)	25% (34)	26% (32)	25% (87)	25% (282)
Percent of 2007 $IT Employee Training (N)[2]	10% (12)	4% (11)	4% (14)	6% (37)	6% (117)

1 MIT CISR 2007 survey of 1508 firms with Dr. Howard Rubin (Weill and Woerner). $IT=operating cost + depreciation. Firm-wide costs include all outsourcing and phone. Outliers greater than 4.7 standard deviations from the median have been removed.

2 Suggestive result only, due to small sample sizes.

2007 IT Portfolios in Not-for-Profits

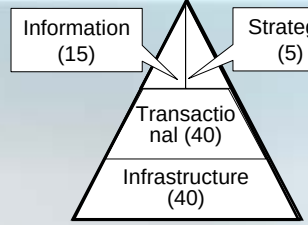


	Non-Profits	Education	Government	All Not-for-Profits	All For-Profits
2007 Firm-wide $IT as a Percent of Expenses[1] (N=Number of Firms)	2.6% (5)	8.3% (32)	3.2% (48)	5.1% (85)	4.9% (360)
IT Investment 2007[1]	13% 13% 25% 49%	12% 14% 27% 49%	13% 13% 26% 48%	13% 13% 26% 48%	13% 13% 27% 47%
(N)	21	69	169	259	1113
Percent of 2007 $IT Run Current Systems (N)	65% (10)	69% (32)	65% (58)	66% (100)	66% (488)
Percent of 2007 $IT Centralized (N)	68% (23)	73% (76)	73% (182)	72% (281)	72% (1217)
Percent 2007 $IT Charged Back (N)	54% (23)	55% (76)	57% (182)	57% (291)	53% (1217)
Percent of 2007 $IT Shared Services (N)	9% (12)	10% (45)	9% (129)	9% (193)	9% (814)
Percent of 2007 $IT Outsourced (N)	30% (5)	25% (22)	20% (41)	22% (68)	25% (282)
Percent of 2007 $IT Employee Training (N)[2]	2% (3)	4% (11)	4% (18)	4% (32)	6% (117)

[1] MIT CISR 2007 survey of 1508 firms with Dr. Howard Rubin (Weill and Woerner). $IT=operating cost + depreciation. Firm-wide costs include all outsourcing and phone. Outliers greater than 4.7 standard deviations from the median have been removed.

[2] Suggestive result only, due to small sample sizes.

IT Portfolio Alignment with Strategy by Top Performers



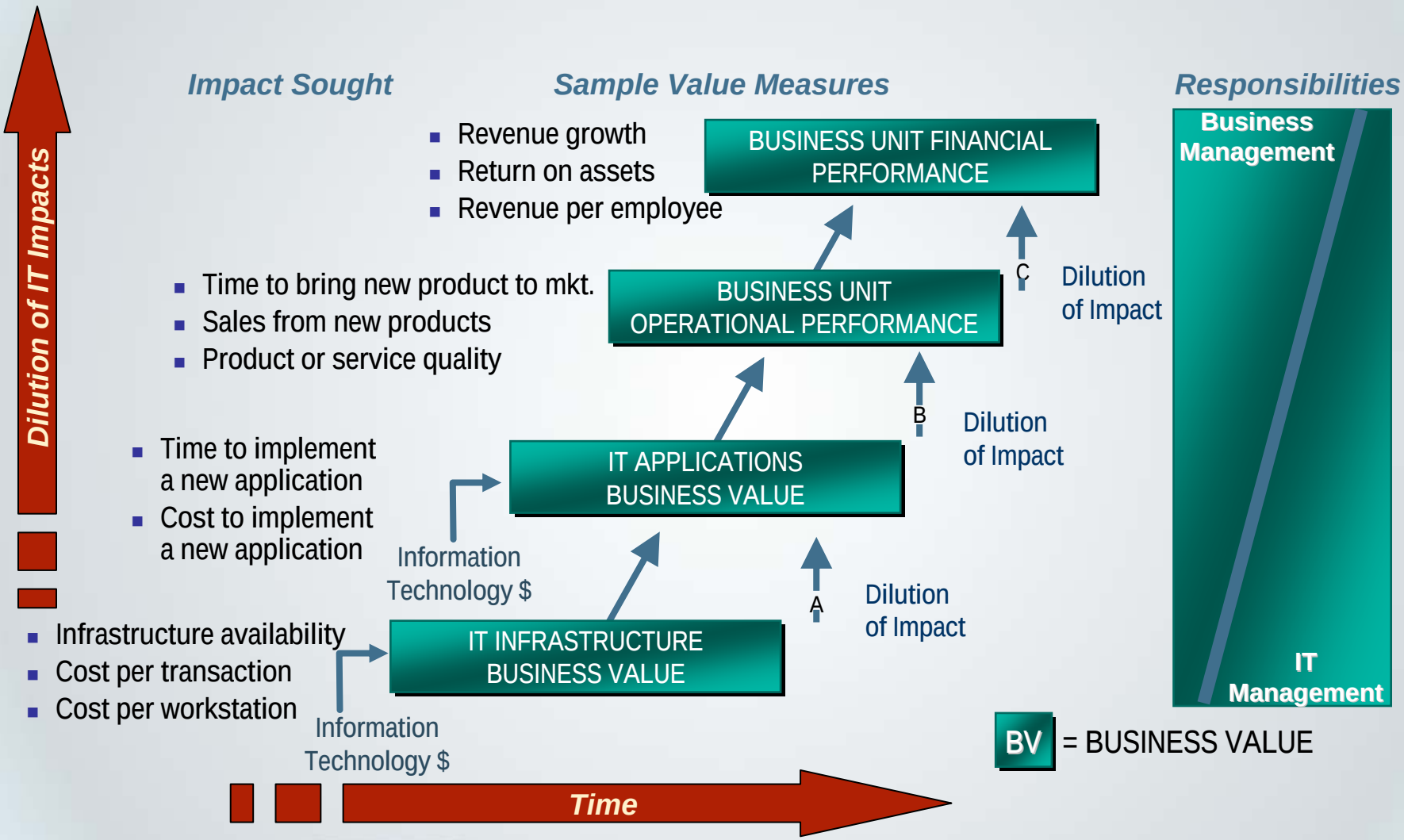
	Business Strategy and Top Performance			
	Average Firm[1] (n=337)	Cost[2] (n=22)	Balance Cost & Agility[3] (n=50)	Agile[4] (n=22)
IT Portfolio Mix of Investments	18% / 11% / 25% / 46%	18% / 11% / 27% / 44%	17% / 11% / 24% / 48%	15% / 10% / 24% / 51%
$IT compared to industry avg. as % of expenses	Average percent of expenses	15% more than industry average	Industry average	3% less than industry average

[1]All 337 US stock exchange listed firms in the sample of 640
[2]Cost Focus: top 50% on ROIC and bottom 25% on percent of sales from modified product.
[3]Balanced: middle 50% on percent of sales from modified products and top 50% on ROIC.
[3]Balanced: middle 50% on percent of sales from modified products and top 50% on ROIC.
[4]Agile: top 50% on revenue growth and top 25% on percent sales from modified products.

Source: Analysis by MIT CISR (P. Weill and A. Johnson) using IT Investment (2003-5 average) and firm performance (2003-4 average). IT Data: Collected from 640 firms using MIT CISR framework. Performance data from Compustat.

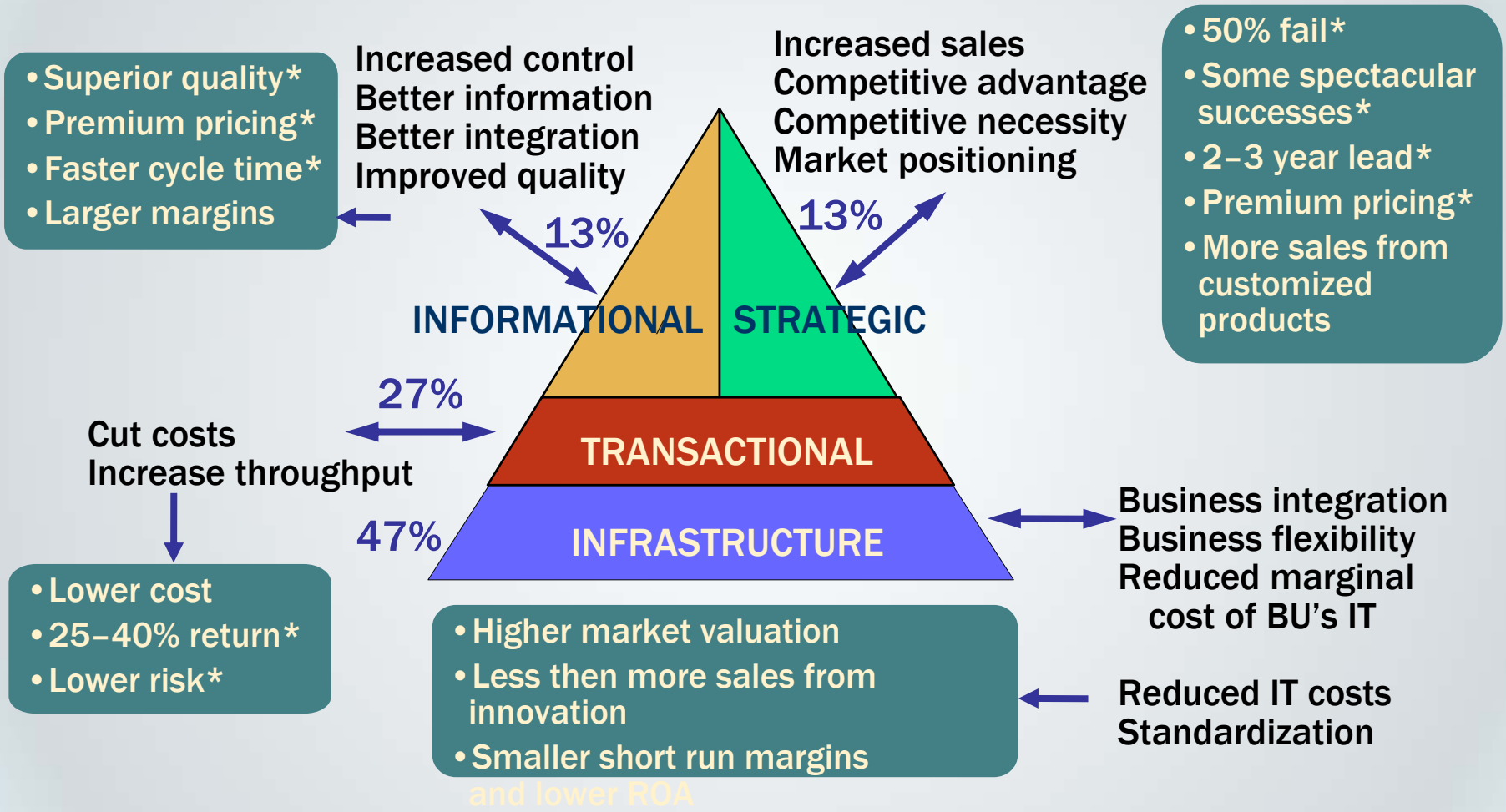
NSF Grant Number IIS-0085725

Tracking the Impact of Information Technology Investments



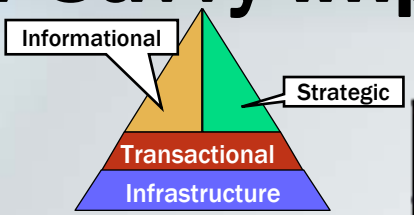
Source: P. Weill & M. Broadbent, *Leveraging the New Infrastructure: How market leaders capitalize on IT*, Harvard Business School Press, June 1998.

The Four IT Asset Classes Have Different Risk Return Profiles



Source: MIT CISR study by P. Weill & S. Aral using 1999–2002 data for 147 firms and *Leveraging the New Infrastructure: How market leaders capitalize on IT*, P. Weill & M. Broadbent, Harvard Business School Press, June 1998. All relationships are statistically significant. (*= 1994–1998 data). Percentages are 2007 total $IT investments from 1113 firms.

IT Savvy Impacts Firm Performance

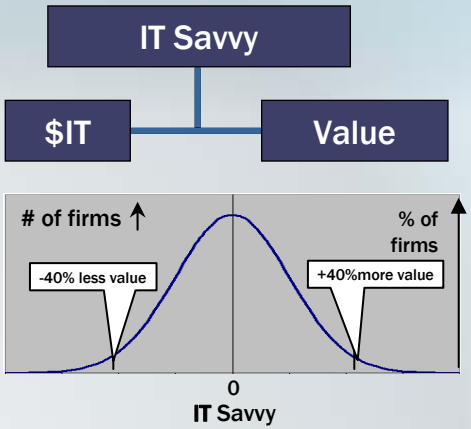


IT Investment	Firms[4]	Lower Cost of Goods Sold			Profit[1]			Agility/Innovation[2]			Market Value[3]		
		Ave.	High Savvy	Low Savvy	Ave.	High Savvy	Low Savvy	Ave.	High Savvy	Low Savvy	Ave.	High Savvy	Low Savvy
IT Infrastructure			+[5]	- -	-	+	- -	-	+	-	+	+	- -
Transactional IT		+				+ +	- -		+ +	-		+ +	- -
Informational IT					+	+ +	-						
Strategic IT						+ +	- -	+	+	- -		+ +	- -
Non-IT Investment													
Firm-wide R&D									+				
Firm-wide Advertising						-			+				

[1] Next year's Net Margin [2] Next year's sales from New and Modified Products/Total Sales.
[3] Market to Book value in same year as investment. [4] Ave. = Average return for all firms, High (Low) Savvy= additional positive (negative) return for firms in the top (bottom) 5% of IT Savvy. [5] +(-) = "High Impact" 50% or less of the highest positive (negative) incremental impact for that variable. ++(–) = "Very High Impact" Greater than 50% of the highest positive (negative) incremental impact for that variable. All impacts are statistically significant controlling for firm and industry effects from 147 firms.
Adapted from: "Generating Premium Returns on Your IT Investments," P. Weill & S. Aral, *MIT Sloan Management Review*, Vol. 47 No. 2, Winter 2006.

NSF Grant Number IIS-0085725

IT Savvy—How Some Firms Get 40% More Value



These firms have:

- More top management commitment
- More integrated business and IT planning
- Less political turbulence
- Higher user satisfaction (e.g., IT Portfolio Health)
- More management experience with IT (e.g., reengineering)

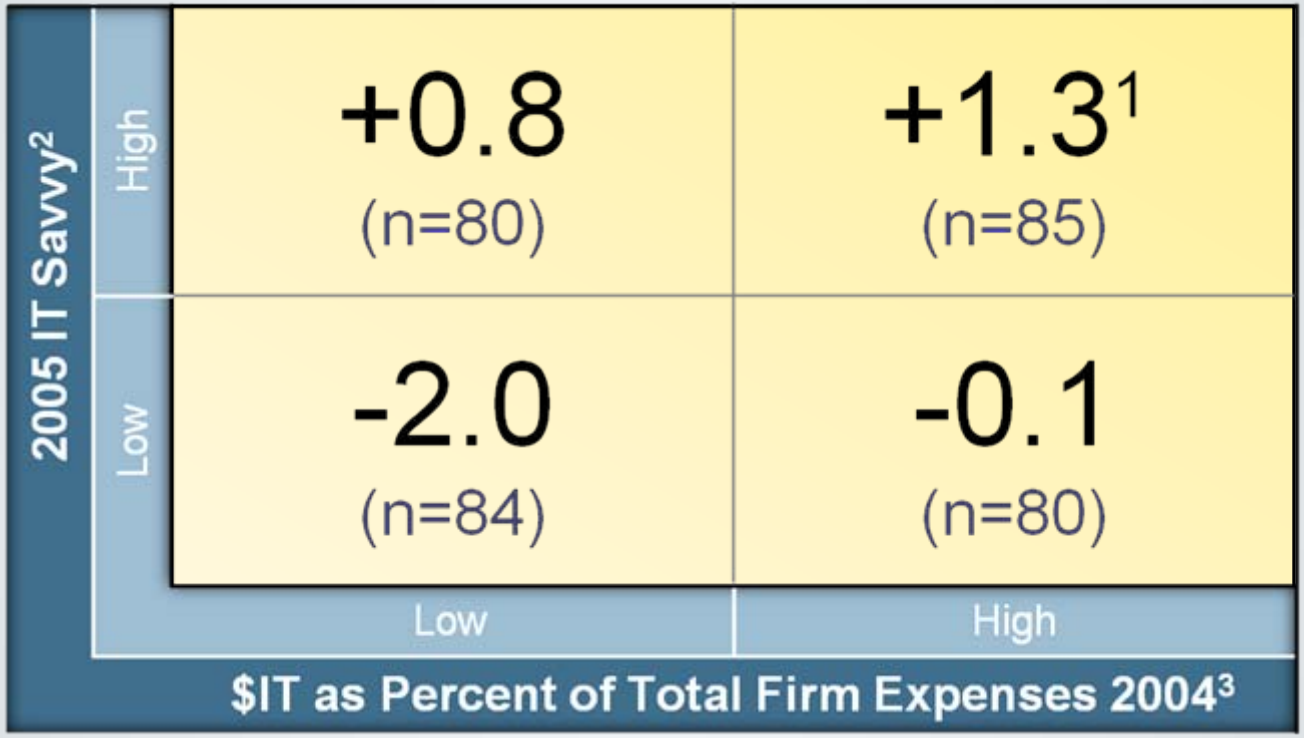
And thus above industry average **IT Savvy***

*IT Savvy = enterprise's ability to gain above industry average returns from IT by better management.

Sources: P. Weill & M. Broadbent, *Leveraging the New Infrastructure: How market leaders capitalize on IT,* Harvard Business School Press, June 1998. P. Weill & S. Aral, "Generating Premium Returns on Your IT Investments," *MIT Sloan Management Review*, Vol. 47, No. 2, Winter 2006.

Firms with above average IT Savvy and IT spending also had 21% higher margins

- average margin 6.1%



Source: 2005 MIT SeeIT/CISR survey of 329 firms matched with publicly available firm performance data. Analysis: Peter Weill and Stephanie L. Woerner.

[1] Net Margin percentage points above/below the industry-adjusted Net Margin. Industry-adjusted Net Margin 2005 = 2005 Income Before Extraordinary Items / 2005 Net Sales minus Compustat Industry Means for Net Margin 2005 (3-digit NAICS).

[2] IT Savvy is a score from -40 to +40, calculated from 24 questions assessing five important characteristics. The five characteristics are Top Management and IT, IT and Business Planning, Organizational Politics & Political Turbulence, User Satisfaction with IT, and IT Practices in Your Business. Split into high and low at median.

[3] $IT as % of total company 2004 expenses – includes operating expenses plus depreciated capital. Split into high and low at the median.

NSF grant number IIS-0085725.

Why Some Firms Achieve More Business Value (1 of 5)

1. Top Management Commitment to Information Technology

Senior Managers:

- Attend IT council meetings themselves and don't send a nominee.
- Help define the necessary capabilities of the digitized platform (e.g., business processes, data, and technology).
- Require carefully considered business cases for investments with measures and responsibilities identified.
- Support the strategic uses of IT by providing seed funding, not requiring traditional net present value financial justifications, and stopping poor performing projects early.
- Encourage post implementation reviews which are not witch-hunts and facilitate the gathering and dissemination of the lessons learned.
- Encourage, fund and actively support training in the use of IT.

Why Some Firms Achieve More Business Value

2. **Integrating Information Technology with Business Planning**

   In your firm there are/is:

   - Executive management considerations of information and IT implications in business strategy discussions.
   - Regular high level briefings on the implication of IT developments in your industry.
   - Accountabilities for achieving strategies which were clear and documented.
   - Articulation of the respective roles and responsibilities of business and IT management in achieving effective and efficient systems and delivering business benefits. Managers are named and held accountable.

Why Some Firms Achieve More Business Value

3. Organizational Politics & Political Turbulence

Your firm:

- Exhibits a strong sense of community, a feeling of shared interests and purpose and cooperation amongst managers. This is reinforced with reward systems and incentives that are based on a good balance of firm-wide and local measures.
- Captures relevant data in one business area and willingly shares it across the firm. Cross functional and business opportunities are actively sought to innovate, improve service, and reduce costs.
- Encourages cooperation via cross functional teams, secondments and movement of personnel.

Why Some Firms Achieve More Business Value

4. Empowered and Satisfied Users

There is:

- A feeling of empowerment for all people in the firm resulting from immediate access to data and systems that help with their job.
- Confidence in the reliability of systems and the completeness of information.
- A sense of relevance and accuracy of the information in the systems.
- Excellent support provided to those using the systems. Help desks are very effective and assistance from technical personnel is excellent.
- Excellent user understanding resulting from easy to use systems and good training.
- The attitude and responsiveness of those who provide support for systems is enthusiastic and professional.

Why Some Firms Achieve More Business Value

5. Learning From Experience

Your firm always:

- Redesigns, simplifies or reengineers business processes before any money is spent on information systems.
- Maximises the reuse of business process and information systems components.
- Ensures that every new IT project that is not infrastructure has a business person as champion with clearly identified deliverables and responsibilities of the business and IT people.
- Ensures that infrastructure investments are treated separately from investments in applications to take account of their shared nature and long life.
- Encourages innovative use of IT in the business units even if firm-wide standards are not always followed. Integration can be achieved later if successful.

IT Savvy—Why Some Firms Achieve More Business Value

IT Savvy	Count
40 ⇨ 20	
19 ⇨ 0	
-1 ⇨ -20	
-21 ⇨ -40	

Risk-Return Profiles in the IT Portfolio

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Source: P. Weill & S. Aral, "Generating Premium Returns on Your IT Investments," *MIT Sloan Management Review,* Vol. 47, No. 2, Winter 2006.

IT Portfolio Management Maturity Model (Jeffery & Leliveld)

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Source: "Best Practices in IT Portfolio Management," M. Jeffery & I. Leliveld, *MIT Sloan Management Review,* Spring 2004. Study with CIO interviews of 130 Fortune 1000 firms in 2003 by Diamond Management & Technology Consultants & Kellogg School of Management.

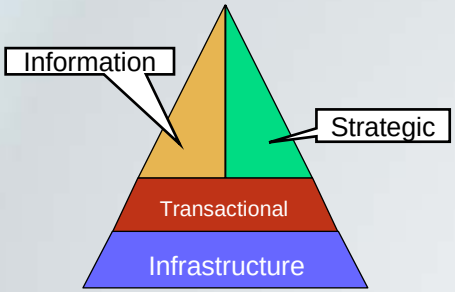
Adopting IT Portfolio Management

1. Assess your IT governance effectiveness – *How urgent is the case for action?*
2. Assess your IT Portfolio maturity stage (1, 2 or 3?).
3. Identify current IT Portfolio. Questionnaire and benchmarks available from MIT CISR.
4. Understand IT asset class performance and benchmarks (for your business by post implementation reviews).
5. Assess, track and compare your firm's "IT Savvy" by business unit.
6. Balance the Portfolio for alignment and risk / return profile.
7. Re-weight Portfolio annually and when major changes occur.

Monday Morning Mandate for the Senior Management Team

Content removed due to copyright restrictions. Page 47 from Weill, Peter, and Sinan Aral. “Generating Premium Returns on Your IT Investments.” MIT Sloan Management Review, Vol. 47, No. 2 (2006): 39-48.

FinCo's Four Years of IT Portfolio



	2007 Projected	2006	2005	2004	Industry average
$IT as a percent of Expenses (average = 12.8)	13.1	13.8	11.5	12.9	10.4
FinCo (firm-wide)	15% / 9% / 14% / 62%	16% / 17% / 17% / 50%	17% / 10% / 29% / 44%	11% / 22% / 18% / 49%	12% / 20% / 14% / 54%
Percent Outsourced	24	21	18	21	15

2006 IT Savvy at FinCo[1]

		All Leaders	Business Leaders	IT Leaders	All n=88		
		n=88	Average n=52	Average n=36	Bottom Third n=29	Middle Third n=30	Top Third n=29
	Overall IT Premium (- 40% to + 40%)	7.6	5	9	-4	10	17
(-8 to +8)	1. Top Management and Information Technology	2.6	2.6	2.6	-0.1	3.0	4.9
	2. Information Technology and Business Planning	3.3	3.6	3.0	0.4	3.7	6.0
	3. Organizational Politics and Political Turbulence	1.4	1.1	1.9	-2.3	1.8	4.7
	4. User Satisfaction with Information Technology	-0.2	-1.5	0.3	-3.8	0.3	3.0
	5. IT Practices in your firm	-0.4	-1.1	1.0	-2.1	0.5	2.7

[1] IT Savvy has an industry average of zero and ranges from + 40% to – 40% on a bell shaped curve.