

The Need to Know About Technology

Abstract

The breadth and depth of data and information regarding technology is, for all practical purposes, fathomless. It is probably impossible, and at least impractical, to know all there is to know.

There is, however, a set of data and information about technology that is highly relevant to one's role and responsibilities in an organization in an industry.

This note suggests ways to discover that set.

Applicable to the Following Courses

TMGT 7060 Systems Analysis and Operations Research

TMGT 7100 Economics of International Trade

TMGT 7200 MIS in Transportation

TMGT 7300 Transportation Management

TMGT 7400 The Logistics Channel Within the Supply Chain

TMGT 7500 International Business & Transportation

Introduction

I have long held that even at the highest executive levels in an organization one needs to have some knowledge of technology. The hypothesis is that lack of this knowledge could prevent one from discovering valuable competitive initiatives. This dovetails with another hypothesis that that sustainable competitive advantage comes from implementing management initiatives faster than the competition.

Technology should be looked at in a comprehensive manner.¹

Technology

- The tools, materials, techniques, and systems that help people meet and fulfill their needs
 - Computers
 - Backhoes
 - Nanomachines
 - Programming
 - Pencils
 - etc.

James Drogan
Educator and Management Consultant

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Figure 1 Technology

For example, one would not expect the chief executive of a ship owning company to lack knowledge of the state of the art in ship design and construction. Consequently, it seems reasonable to suggest that this person should have some level of knowledge in all technology critical to the health of the business.

The knowledge required is defined by breadth, depth, and currency.

Hereinafter, when I use the phrase “knowledge of technology,” I mean that which can be practically applied in a given situation.

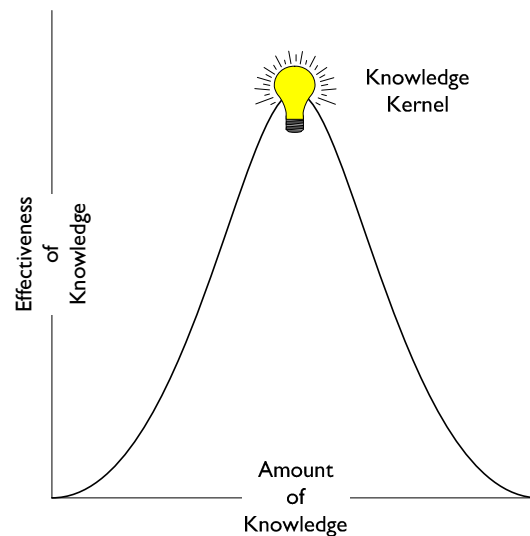


Figure 2 The Amount and Effectiveness of Knowledge of Technology

Figure 2 captures this notion. To the left of the mean lie the less qualified, to the right the over qualified.

¹ (Drogan 2004)

Breadth, Depth, and Currency

The level of knowledge one requires is commensurate with one's role and responsibility in the organization. One determinant of role and responsibility is the planning and control level.²

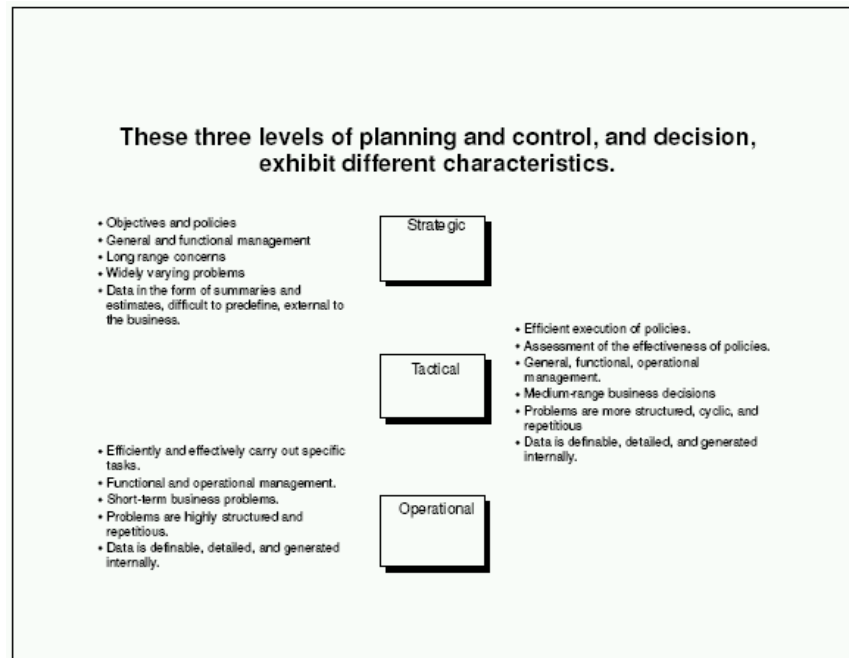


Figure 3 Planning and Control Levels

Towards the top of this chart one is interested in the return on the investment in technology over a long term, and how technology can support competitive advantage. Senior executives are concerned about the health of the entire organization and, therefore, need a broad view of technology.

Towards the bottom of this chart one is interested in how to implement and operate the technology in order to get the desired return. In most organizations, people at the lower level of planning and control have narrower functional responsibility (see the following table³) and therefore take a narrower view of technology.

Accounting and Finance
Administration
Executive
Intermodal
Maintenance and Engineering
Marketing
Sales
Transportation

Table 1 Functional Areas

² (Drogan 2008)

³ (Drogan 2008). The functions listed here are based on those one might find in a freight railway.

Personnel in the transportation function may be concerned about GPS to enable real-time tracking of the firm's assets. This is likely not to be a concern of accounting and finance. Accounting and finance will, however, be concerned with the nature of investment required for this capability.

Together, Figure 3 Planning and Control Levels and Table 1 Functional Areas help us deal with the question of currency.

By currency, I mean how up-to-date the knowledge is.

At the strategic planning and control level there is not the need to be as current on technology knowledge as there is at the operational level.

The currency characteristic is also shaped by the functional area. For example, technological changes affecting administration are likely to be less frequent than those affecting transportation.

Simply put, then, what one needs to know about technology depends on where one sits in the organization.

What was current yesterday may not be current tomorrow. Currency needs to mean just that – current.

Knowledge arriving after the decision window⁴ has closed may not only be useless, but have an unacceptable opportunity cost.

It becomes incumbent on us, after defining the required “knowledge kernel” to determine the actions we need to undertake to keep the kernel current.⁵

Keeping current ought to be a regular task in your day. Get the process organized and scheduled.

⁴ (Drogan 2007)

⁵ As an example, almost every day I scan some 65 RSS feeds, nine websites, two e-mail accounts, and three social networking sites. In addition I meet on a regular basis with my colleagues at the college and three external groups, scan and/or read two daily newspapers, one weekly news magazine, a number of less frequently published trade, business, and political journals, and am actively reading as many as four books. Keeping current is a lot of work.

It's Not that Simple

Were it that simple we could sit in our offices, ask questions, and come to a conclusion as to the breadth, depth, and currency of technology knowledge required by our job. However, other forces come into play.

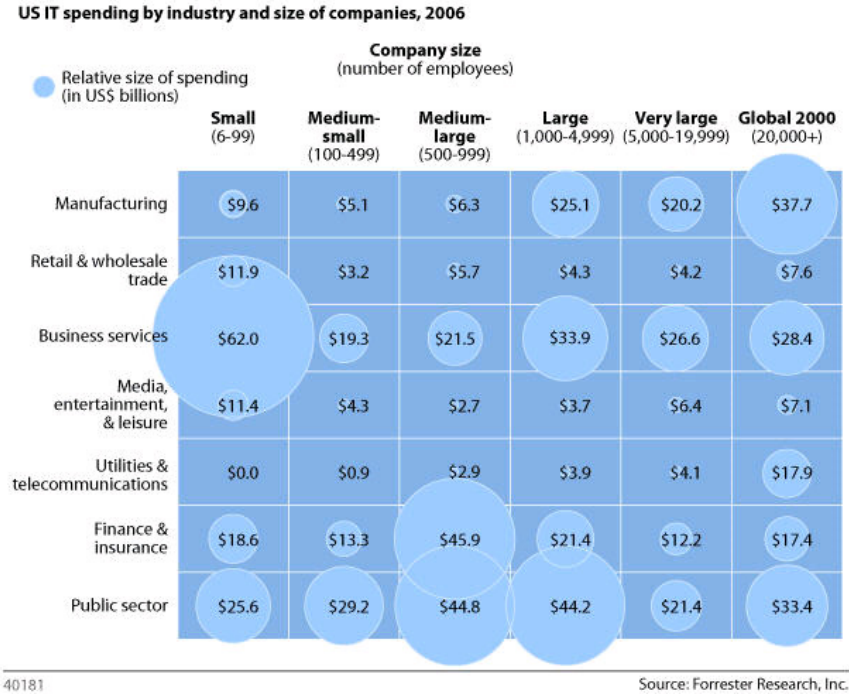


Figure 4 US IT Spending by Industry and Size of Companies, 2006

Consider this figure.⁶ Investment in technology varies by industry and company size. Hence, it is reasonable to conclude that the required technology knowledge will also vary by industry and company size.

⁶ (Young 2008)

Another significant factor shaping what one needs to know about technology is culture.⁷

Project GLOBE provokes us to understand how cultural differences affect what we do as a business

<i>Dimensions of Culture</i>	<i>Cultural Groups</i>
<ul style="list-style-type: none">• Assertiveness• Future Orientation• Gender Differentiation• Uncertainty Avoidance• Power Distance• In-Group Collectivism• Performance Orientation• Humane Orientation	<ul style="list-style-type: none">• Anglo• Arab• Confucian• East Europe• Germanic• Indigenous Africa• Latin America• Latin Europe• Nordic• South Asia

Project GLOBE http://www.ucalgary.ca/mgl/GLOBE/Public/Link/lessons_project_globe.pdf

Figure 5 Consideration of Culture

For example, what technology knowledge do we need to operate successfully in a culture that exhibits significant power distance?⁸

⁷ (Javidan and House 2001)

⁸⁸ "Power Distance is defined as the degree to which members of a society expect power to be unequally shared. It represents the extent to which a community maintains inequality amongst its members by stratification of individuals and groups with respect to power, authority prestige, status, wealth, and material possessions. It also reflects the establishment and maintenance of dominance and control of the less powerful by the more powerful." (Javidan and House 2001)

Applying the Knowledge

Knowledge, in my view, is without value unless it is applied. There are many models for applying knowledge and the following likely adds to that count.

My experience suggests four key principles in the application of technology.⁹

SUNY Maritime

Notes on Building a Management System

Principles for Applying Information Technology

- The only legitimate uses of information systems are to improve the performance of the enterprise.
- Information systems are inextricably intertwined with the mission, objectives and structure of the enterprise.
- Disciplined approaches to applying information systems are critical to success.
- Information systems are technology plus process plus tools plus skills plus culture.

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Figure 6 Principles for Applying Information Technology

⁹ (Drogan 2005a)

An approach needs to be in place that allows these principles to be used to effectively and efficiently apply the knowledge of technology.

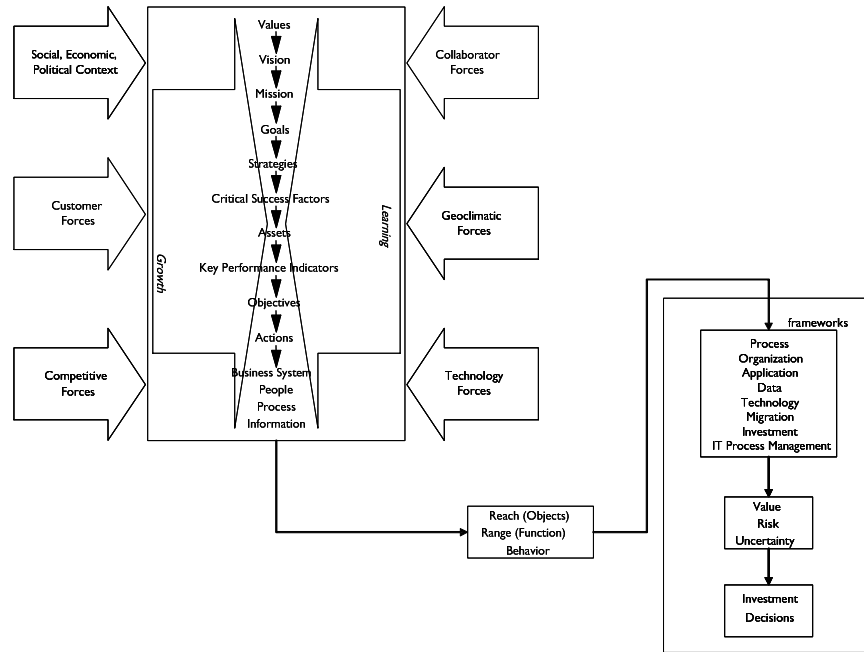


Figure 7 Business Drivers, Business Configuration, and IT Strategy

This chart¹⁰ is an example of a discipline that connects the impact of the external business drivers on an organization with the investment decisions associated with the deployment of technology.

Coda

What is critical in the context of the role and responsibilities of senior executives, and the decisions they make, is knowledge.

The notion of breadth, depth, currency, and application is summed up in this figure

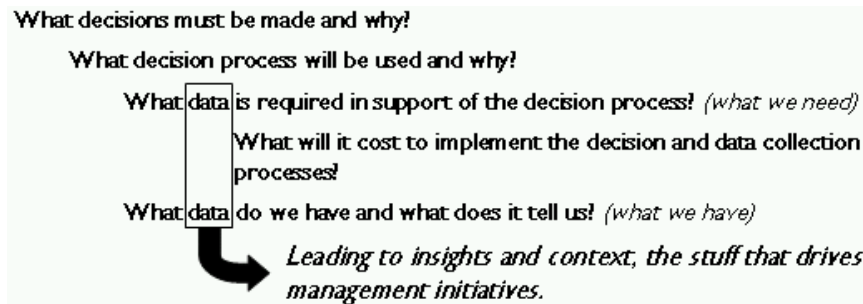


Figure 8 Determination¹¹

Figure 8 is process whereby one determines what data is required to support decisions. You do not want to collect data unless you know what it is to be used for.

This note has described an approach to defining the all-important knowledge kernel and an approach to applying that kernel to improve the performance of an organization.

¹⁰ (Drogan 2005b)

¹¹ (Drogan 1999)

I have not aimed at being prescriptive, but rather at being illustrative. My sense is that as your role and responsibilities change to be more encompassing of the goals and objectives of a firm you must take additional responsibility for managing the value of the knowledge kernel. Of course you may have a staff to help you, but at the end of the day, you are the one holding the authority and will be held accountable for the results. The excuse that your staff did not perform is unlikely to be looked upon favorably.

James Drogan
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Bibliography

- Drogan, J. 1999. Business Intelligence - Potential Impact in Railway Freight Transportation. In .
- . 2004. A Small View of a Possible World.
<http://jmsdrgn.squarespace.com/storage/A%20Small%20View%20of%20a%20Possible%20World.pdf>.
- . 2005a. Note on Building a Management System.
<http://jmsdrgn.squarespace.com/storage/Note%20on%20Building%20a%20Management%20System.pdf>.
- . 2005b. A Note on Business Drivers, Business Configuration, and Information Technology Strategy.
<http://jmsdrgn.squarespace.com/storage/A%20Note%20on%20Business%20Drivers%20Business%20Configuration%20and%20Information%20Technology%20Strategy.pdf>.
- . 2007. The Relevance of Data, Information, and Knowledge.
<http://jmsdrgn.squarespace.com/storage/Data%20Information%20and%20Knowledge%20-%20Relevance%20and%20Understanding.pdf>.
- . 2008. When Technology Fails.
<http://jmsdrgn.squarespace.com/storage/When%20Technology%20Fails.pdf>.
- Javidan, Mansour, and Robert J. House. 2001. Cultural Acumen for the Global Manager: Lessons from Project GLOBE. *Organizational Dynamics* 29, no. 4: 289-305.
- Young, G. Oliver. 2008. How Badly Will The Finance Meltdown Hurt Enterprise Web 2.0? . *Strategic Heading*. November 1. <http://blog.strategicheading.com/2008/11/01/how-badly-will-the-finance-meltdown-hurt-enterprise-web-20/>.