ISA Management Division

Are You In Control? Part III

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Introduction

A company's willingness to invest in **IT** has an enormous impact on its ability to optimize its current operations **strategically, tactically**, and **operationally** and to look **inward, outward, and across** its organization and the world for new opportunities for improvement and growth. Do you know the different types of **IT investments** that are being made in your company? What type of **IT investor** are you? Why is a company's **IT investment strategy** important? In this article, Peggie Koon continues the discussion of information technology or **IT** as she looks at how a company's IT investment strategy can influence its ability to achieve control and to survive.

IT Control in Review

In our first submittal we said that a company is in **_control_** when it is effectively utilizing **IT** – **strategically, tactically,** and **operationally** to optimize its current operations and to look inward, outward, and across the entire organization (**and the world**) for new opportunities for improvement and growth. The words, "**and the world**", were deliberately added to our original definition to underline that fact that today's successful companies must operate in a global marketplace. It is no longer

good enough to use *IT* effectively in your organization; to remain competitive your company must be able to utilize *IT* to look outward and across the world!

Next we reviewed the types of organizational issues that exist in companies today. According to Post & Anderson, *IT* is categorized (and investments are made) based on the following matrix:

Sector	Operational	Tactical	Strategic
Production	• Machine settings • Worker schedules • Maintenance schedules	• Rearrange work area • Schedule new products • Change inventory method	• New factory • New products • New industry
Accounting	• Categorize assets • Assign expenses • Produce reports	• Inventory valuation • Depreciation method • Finance short/long term	• New GL system • Debt vs. equity • International taxes
Marketing	• Reward salespeople • Survey customers • Monitor promotions	• Determine pricing • Promotional campaigns • Select marketing media	• Monitor competitors • New products • New markets

As examples, we reviewed the use of *IT* as it relates to business opportunities in production or manufacturing operations. We also noted that different types of *IT* are required to address different types of problems and related decision-making efforts in a company. We followed the discussion by correlating these types of business problems to the types of *IT* that are available. Recall our previous diagram used to depict the types of *IT*. *Operational IT* is used at the lowest level for the company's day-to-day operations and related *operational decisions.* Examples of operational IT are transaction processing systems such as an accounting information system or a production data collection system. *Tactical IT systems* are usually used in decision-making that is *tactical* or more complex in nature, requiring that major changes are made to the business processes without altering the existing organization. Examples of *tactical IT* are decision support systems such as automated planning and scheduling (APS), asset management systems (AMS), enterprise resource planning

(ERP), product life-cycle management (PLM) or supply chain management (SCM) systems. Finally, we said that the use of **strategic IT** typically results in changes to the overall structure of the business; **strategic decisions** such as these are typically made to gain an advantage over the company's competition. Examples of **strategic IT** include business intelligence systems that provide global product marketing strategies for new and existing products, analysis of competitor's market share/statistics, or information on barriers to entry into a new product market, etc.

Types of IT

IT Investments

From the description above, it is easily discernible that a company's short-term and long-term strategy – whether it's striving to improve its operations by switching from physical to virtual processes, whether it will enter the world of e-commerce and e-marketing, whether it will capitalize on wireless technology and mobile computing, whether the next production/manufacturing site or office will be in the US or on foreign soil (India, China, etc.) – the types of problems that must be solved to achieve strategic goals and objectives will determine the types of **IT** that ultimately used by a company, which in turn determines the types of **IT**

investments that are made. So it follows that *IT investments* can be categorized as *strategic*, *informational, transactional,* and *infrastructure* (McNurlin & Sprague (1998)*.*

Strategic investments usually result in a change in the way that a company runs its business. These investments are long term; oftentimes ROI calculations are not immediately available and yet they are critical to the company's ability to compete, to offer products and services, and to its overall profitability.

Informational investments provide a company with data and information that is required to manage and control the organization; these are medium term investments that depend on transactional and infrastructure investments for success (McNurlin & Sprague).

Transactional investments support the operations. These investments often result in short term ROI and include automation, replacing labor with capital; the result is usually increased throughput and improved productivity (p. 162).

Finally, *infrastructure* investments provide the foundation for IT capability in a company; it is the infrastructure that "enables other systems that yield business benefits" (p.163).

If an *IT* department or group wants to help a company use new technology, that group must first understand the company's comfort level with that technology. This comfort level has been described by Ghaffari & McNurlin (cited in McNurlin & Sprague, 1998) via use of 5 humps on a technology camel. The 5 levels or humps on the technology camel are: *technically averse*, *late majority*, *early majority*, *early adopters*, and *eager beavers*.

The *eager beaver* philosophy is usually adopted by companies who are innovators and pioneers. They are usually the first to use a new technology. *Early adopters* are usually right behind the eager beavers. Members of the *early majority* say that they will try a new technology, but typically wait until someone

comes along to implement it for them. Companies in the **late majority** are technology skeptics who "are not afraid" of a technology but "have serious concerns" about risks and costs. Finally, the **technically averse** resist new technology (McNurlin & Sprague, 1998 cited in Koon, 2002).

So what difference does *IT* make?

Why should you and every manager be interested in your company's IT investment strategy? Because the strategic use of IT can make the difference between an organization's success and failure in today's global marketplace. "Firms are constantly searching for ways to gain a competitive advantage over their rivals. Finding these opportunities is hard: it requires extensive knowledge of the industry, and it requires creativity. Managers also have to be willing to take risks to implement strategic options. Strategic uses of IT often involve the use of new technology and development of new software. Being the first company to implement a new idea can be risky. However it can also bring substantial rewards" (Post & Anderson cited in Koon, 2002).

According to Bill Gates, "The successful companies of the next decade will be the ones that use digital tools to reinvent the way they work. These companies will make decisions quickly, act efficiently, and directly touch their customers in positive ways" (Robb, 2001 cited in Koon, 2002).

Are you in control? Is your company using IT **operationally, tactically** and **strategically** to control the operations of your company? Does your company have competitive intelligence – do you know what your competitors are doing? Is your company an **early adopter** or is it **technically averse**? Let me tell you, prior to 2002, I barely gave the matter any thought. But in 2002, I completed my dissertation, **IT in Textile Manufacturing**. During my research effort, I studied in depth the history of automation in textiles and the most prevalent uses of IT in

textile manufacturing. My research confirmed the correlation between management philosophy, business strategy, and deployment of IT within the textile manufacturing community. I completed that study acutely aware of the impact that global marketing and NAFTA would have on the textile industry. I was also acutely aware of China's predicted emergence as manufacturing super power in 2005.

Recently at ISA EXPO 2005, I had the chance to meet K.K. Siew. K.K. has written a number of articles on the impact of cultural diversity on a company's ability to manage projects in the global marketplace. His last article fascinated me because he discussed China and the US as two cultures that have dramatically impacted every nation in our world. As I read his article, I was reminded vividly of the warnings that US textile manufacturing companies received (in 1996) concerning the growth of imports from China and the impact that these products would have on the business. US government attempted to introduce textile manufacturers to new **strategic, tactical, and operational IT** to enhance their business processes and reduce costs associated with the inherently long textile manufacturing supply chain. The DAMA (Demand Activated Manufacturing Architecture) was developed to provide advanced technology to the US textile industry. As I studied the details of the DAMA initiative, which was subsidized and supported by some of the brightest technical experts in the US, it amazed me that only a small number of these companies participated in the program. You see, for so many years processes such as dyeing were considered more art than science. As a result, many of these companies remained **technically averse IT investors**. In fact, in 1997, Bill Harris of the DAMA project said that of all the other industries in the US the textile industry was last in adopting new technology.

What difference does *IT* make? Look around you. Have you been reading the local newspapers? Are you aware of the impact that government trade agreements like CAFTA and NAFTA and the global marketplace has had on the textile

industry? It has been devastating! The numbers of plant closings have been unbelievable, particularly across the Southeast.

Was it because these companies were **technically averse**? Some might say that many of the textile manufacturers who have closed plants or filed bankruptcy were the most automated. In fact, many of these companies did invest heavily in plant automation. To those who would reply in that fashion, I would say from my own textile experience that while large **transactional IT investments** have been made in more automated machinery and associated **operational IT systems**, many textile manufacturing companies have failed to invest in **strategic IT**. While other industries have embraced e-commerce, e-marketing, and globalization, many US textile companies have not considered using **IT** beyond their existing business processes, not to mention to investigate new products or markets or to analyze the strategic advantages/disadvantages of relocating and building new enterprises on foreign soil – and when they have embarked on these ventures, their lack of understanding of cultural differences have often resulted in failure. And they have not used **IT** to look inward and across their companies to improve costs and efficiency via the use of virtual rather than physical space, especially when ROI calculations are not understood.

Would more of these companies have survived had they made **strategic investments in IT**? We will never know the answer to this question. According to K.K. Siew, the key to survival of businesses in the new global marketplace is more cultural than technological. Perhaps he is correct in his assessment. And yet, according to Porter, companies must use **IT** to look inward and across the organization and outward to the globe in order to survive. Perhaps, the use of IT to reduce costs and shorten the supply chain couple with using the Internet to gain competitive intelligence about the global textile marketplace, (including India, China, and other developing countries and their business practices, strategies, culture,

government, geographic opportunities, and plans for growth in textile manufacturing

would have made all the difference in the world – the difference between bankruptcy

and survival.

About the Author:

Dr. Peggie Ward Koon has over 25 years of experience in developing IS systems for plant process automation and process control; she is an author of technical articles and publications. She has authored nine technical publications, including "CIM Capitalizes on Distributed Controls", ***InTech*** Magazine (1995), "GAMMA -- Graniteville's Application Modules for Manufacturing Automation", ***IEEE Transactions on Industry Applications*** Magazine (1995), "Managing More With Less -- A Real-time Example of Optimized Resource Allocation", ***ISA Transactions*** Magazine (1996), "Textile firms automate to survive; here's how Avondale Mills does it", ***InTech*** Magazine (1998), "IT Management: Century 21, ***Industrial Computing*** Magazine (2001); Industrial Computing Online (2001), and a variety of articles on issues in textile manufacturing including partnering, process automation and process control, SPC/SQC, and IT management for such organizations as the Instrumentation, Systems, and Automation Society (ISA) and the Textile Fiber & Film Industry Applications Society of the IEEE. She is currently a Manager of IS Plant Systems at Avondale Mills in Graniteville, S.C. Dr. Koon is the Director-Elect, Process IT Chair and Membership Chair for the Management Division of ISA, a Senior Member of ISA, and a member of the IEEE.