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FEATURE

Organization and Operations: Technology and Changes

Kim Liang (Samuel) Chuah

***Abstract:** The rising tide of innovation in information technology in the last two decades has changed the way we do business. Organizational transformation occurs in the breaking down of walls between various functional groups, in the reduction in levels of management, and in the way decision making is processed. Operations are spread across the globe yet linked together via communication technology, making it possible to alter the mix of commuting workers and stay-at-home employees. Solutions to challenges from innovations in information technology often mean completely new approaches to problem solving. Flexibility is the key to future success.*

During the last half century we have seen unprecedented technological growth. With it came technological innovations that changed the way we managed our resources: economic capital, human capital, and information capital. New metrics were developed to ensure economic capital was maintained at the highest level of efficiency. Some of these metrics were adapted and adopted to increase the productivity of human capital. New technology was developed and innovations implemented to achieve significant improvement in data integrity and security in our information capital. To be sure, the advancement did not come without costs. This paper brings out some of the challenges, and changes in response to these challenges that may have profound long term effect in how we do business.

A Recent (Untold) Story

Widespread impact from information technology is a fairly recent phenomenon. Access to technology and implementation of technological innovations were confined to larger firms that were better endowed with

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financial capital, and hence expensive technology. It was in the early 1980's when personal computers became accessible and affordable by a larger group of techno-savvy individuals, self-employed or employed by smaller firms. Larger firms preferred the more powerful mainframes and mini-computers, which still gave the larger firms an edge in competitiveness.

The nineties saw the personal computer industry go through explosive growth, where usage in the office and at home increased. Although unaware of the full potential of the personal computers, government agencies and private institutions pushed for greater and better access to personal computing as essential to greater productivity and economic growth. More computers and more powerful computers became regular items in a firm's budget, and under the Christmas tree. At some point, a tipping point seemed to have been passed and the networking effect took off, and the rate of computing innovation became exponential: use of bulletin boards, point of sales portals, simultaneous communication protocol, transmission of large complex files instantaneously between distant lands, etc. However, not everyone was comfortable with the speed with which innovations swept across the internet for many personal reasons. Further, implementation of the technology into invasive activities on the internet did not help the skeptics. The shortsightedness of the original programmers in the computing code resulting in the millennium scare short-circuited the growth in computing technology, at least for a time. Computer buying actually slowed, resulting in the slump of the technology industry during the few years around 2000.

There were actually some benefits that came out of this slump. Many firms and individuals actually had some time to stop and think about their use of the technology. Instead of buying new machines, evaluations were made and strategies taken to "cope" with perceived needs using current levels of technology. Adaptations were implemented, cheaper upgrades were considered, and needs were assessed while waiting for the "fix" for the millennium bug. In many cases, companies had done wholesale replacements in preparation for Y2K, so they did not need to upgrade anything for several years. During this time, many found that there was more to computing than being able to send email using the best equipped graphical window interface, that mail-merges and other publishing features were already included in their "high-quality typewriter," and that one didn't have to use the calculator before typing the answer into the spreadsheet. To be sure, there were uncountable new uses that were waiting to be discovered. This was a time of personal discovery for the motivated; a time when human capital was created and accumulated at a rapid rate.

This “breather” was actually essential in allowing innovations in information management to catch up. Instead of focusing on how much faster we could get a piece of data from point A to point B, we had time to think about how much more safely we could do it. The dot.com bust would not have happened if there had been enough participants in cyber-transactions. Many were skeptical, cautious, and even afraid, and for good reasons. Looking back now, knowing what we know today on the ease of identity theft and other invasive activities and the lack of security protocol at the time, many of us might not have been so adventurous. Management found innovative ways of managing information and of acquiring, analyzing, storing, disseminating, and retrieving information efficiently. This resulted in the slimming down of middle management in the nineties, and the cost-cutting is still on-going.

Organizational Changes

The flattening of organizational structure is one important result of innovations in information management. There is no longer a need for information to be filtered up through the traditional channels. Traditional filtering of information can be selective and subject to manipulation, not to mention time-consuming. Today’s instantaneous communication, which happens at a negligible marginal cost, means that anyone at any level can be informed at any time. The choice to be informed rests with the recipients, not with the senders. When a subcommittee debates and concludes, members do not need to be in the same locale, and any level of supervisors may be kept informed of the progress. The supervisors are kept in the information loop, but do not participate in the debates. When decisions are sent up for processing and implementation, the supervisors know exactly what they are and there is no longer any need for further debate.

In today’s team approach to management and operations, decisions that affect other departments need inputs from those departments. Inclusion of those others in the information loop provides opportunity for inputs before it gets too unwieldy. Obviously, use of information technology in such manner may eliminate a layer or two of middle management, or at least eliminate certain job functions.

With personal information technology flourishing and being widely used, another impact is on the office administrative staff. Job functions are changing from typing and record keeping to researching and maintaining information databases, among other things. Required job skills are changing, and job complexities are evolving. More and more daily functions are electronic and automated. Even small companies can appear sophisticated with the appropriate back-office technology.

Adapting Operations

The most obvious impact of recent innovations in technology is the breaking down of the physical walls of a firm. This frequently results in the out-sourcing of business activities. In the fifties and sixties, it was the out-sourcing of manufacturing activities; since the nineties, it has become the out-sourcing of services. Out-sourcing of service activities can be looked at in two major categories: off-shore out-sourcing and domestic out-sourcing. Recent developments in employment regulations encourage firms to be more creative and flexible in their employment expectations and requirements. In ConAgra Foods, creative arrangements were offered to an expectant mother to work from home. According to Shellenbarger (2007), companies like UnitedHealth, IBM, and American Express, among others, are hiring new full-time corporate employees with benefits. Although these are still small in numbers, the trend is unmistakable. Other firms hire part-time return-to-workforce MBA moms, among other jobs. Coombes reported a survey result that “workers who telecommute... report the highest levels of satisfaction with their jobs and loyalty to their employers” (2007, ¶ 3). With the current dismal state of the transportation system, telecommuting allows the employees and the firms to save time on actual commute and to be more productive and cost effective.

The current crop of inexpensive video-conferencing equipment and software is enabling firms to communicate effectively with their branch divisions from coast to coast, and beyond. Data security and effective control technologies enable service activities to be outsourced across the seas. The same online technologies are enabling small firms and home-based businesses to interact with the big players, making them more effective and competitive.

Technological innovation in the area of automation is also getting a foothold in service activities. More leading firms are embracing the automation of their accounting services in e-payables, reconciliation, among others, and human resource management in automating data collection, processing, and reporting. All these are to enhance access to accurate data and strategic decision making. Survey after survey report that leading companies that embrace technological innovation in their service operations are consistently ahead of firms that lag behind in innovation.

In other more matured management technologies such as Six-Sigma quality management and inventory management, new inroads are being made in health care and educational institutions. These are clunky institutions that are traditionally slow to change. Educational institutions are slowly toying with cost-cutting measures that business sectors have employed for more than a decade. Hospitals are trying to glean from factory managers fresh perspectives

in inventory management, standardization of procedures and services, quality management, improving accuracy and reducing errors, etc.

Challenges and Conclusions

So, what is holding some of us back from adopting new models of doing business? How do we relinquish direct control and still ensure employee accountability? Some say empowering employees results in more motivated workers, who welcome responsibilities and become more accountable. Others are ingrained in a traditional mode of doing things and are resistant to change. Businesses have sacred corporate cultures that cannot be broken. Baby boomers are reluctant to learn new skills, as their old skills had brought them this far, and retirement is just around the corner. However, a competitive firm cannot postpone the incorporation of technological innovation into all its business operations; services or other areas. It needs to push all its employees to embrace technological innovation by including in their annual performance reviews incentives to adopt and adapt technology to increase productivity. Core HR systems are critical to facilitate strategic decisions on procuring, training, and retaining needed human capital. Survival of the firm depends on it. Over the next decade or so, Human Resources will be increasingly expected to effectively use organizational development tools to more effectively manage the inevitable changes imposed on the organization, whether technologically induced, or otherwise.

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Kim Liang (Samuel) Chuah
Professor, Business Department, Andrews University
Berrien Spring, Michigan, USA

