Strategy, Differentiation, and the New IT

Dr. Marco Iansiti, Ph.D.
David Sarnoff Professor of Business Administration
Harvard Business School

November 2005

www.key-inc.com

Keystone Strategy, Inc.
Research
Information
Technology
Strategy

Executive Summary

IT has finally moved into a truly strategic, differentiating role. The evolving role of IT within the enterprise is captured by three principal themes in our research.

First, as with general ledgers twenty years ago, the challenges of managing global operating complexity are being tackled by an increasingly powerful combination of business applications, which are taking on an ever more essential role. These traditional enterprise applications are being rolled up into an integrated business process platform, which encompasses core business process, captures essential data and allows firms to extend and customize their impact.

Second, a new breed of customized and differentiating business applications is being built on top of this business process platform. Differentiated IT (by definition) does not encompass a standard set of applications that conform to corporate wide automation. Each strategic project can be a unique effort, and the number of unique or custom strategic projects in leading enterprises appears to be growing. This is creating a "long tail" of potential IT projects. To finally attack this challenge in an efficient fashion, IT departments are adopting a new method of IT development. The approach relies on the use of intranet portals and composite applications to rapidly build and deploy new functionality in targeted areas. A composite application integrates data and functionality from different existing sources (from legacy applications to web services) by leveraging a services oriented architecture (SOA). IT teams can now launch applications in weeks or months that have a critical strategic impact. The unprecedented access to data enabled by an integrated business process platform combines with the ability to deliver applications quickly to allow IT applications to deliver truly strategic business intelligence to decision makers. Managers can now request and expect the rapid delivery of unique information that was previously opaque.

Third, information technology applications are extending outside of the enterprise into the management of the firm's business ecosystem. Enterprise business process platforms are thus becoming key enablers of a firm's ecosystem strategy. Ecosystem keystones are extending their platforms to provide not only internal business units but also business partners and customers with critical data and functionality. Niche players in the ecosystem are connecting to the platforms offered by the keystones, and leveraging rapid deployment tools and methodologies to build their own unique applications.[1]

[1] See M. Iansiti and R. Levien, *The Keystone Advantage* (Harvard Business School Press, 2004).

Research and Themes

This paper reports on exploratory research aimed at understanding the evolving impact of information technology on enterprise performance. The research focused on field work at three major multi-billion dollar companies, Whirlpool Corporation, a global appliance manufacturer, Day and Zimmermann, a provider of managed products and services to corporations, and Dade Behring, a worldwide provider of clinical diagnostic instruments.

We saw three themes in our research:

The Integrated Business Process Platform

Firms are standardizing many of their business processes and building an integrated platform of information technology applications that covers areas such as human resources, financial management, basic operations, and customer relationship management. This effort is aimed at reducing maintenance costs, improving interoperability, and building an integrated foundation for the rapid deployment of more customized applications.

Whirlpool Corporation's standardization process packaged 128 legacy applications into modules that now form its foundational IT platform. This platform integrates standard business processes (and related data) across sales, distribution, HR, manufacturing, and finance functions. The standardization of these business processes across global operations increases the alignment of the company's global IT design with its corporate design. This alignment increases corporate agility (such as the ability to rapidly change pricing globally) and makes it possible to leverage the global platform for strategic applications (such as hedging commodity purchases across global business units).

Having a standardized business process platform also allows Whirlpool Corporation to reduce costs and free up resources. Once a legacy application is reduced to maintenance only, its continued operation is outsourced to free up IT (Whirlpool Corporation outsourced its application maintenance four years ago). In Whirlpool Corporation's case, the costs of operating its IT infrastructure were reduced by five to seven percent for each of the last four years.

A New Breed of Custom Strategic Applications

The creation of an integrated business process platform, coupled with the deployment of rapid development tools is enabling IT departments to assume an increasingly strategic role in the firm. In each of the case studies, IT planning is now closely integrated with the priorities of the senior leadership team, corporate strategy and business planning.

It is almost a tautology that strategic differentiation implies some level of uniqueness. This uniqueness and value is driven by the ability of IT to offer solutions and ideas that

target differentiated strategies and exceed the capabilities of a traditional IT organization. This approach is enabled by a new application development framework. IT teams at both Whirlpool Corporation and Day and Zimmermann (D&Z) have deployed new application development frameworks characterized by services oriented architectures, master data management, and business intelligence. Central to these methodologies is the ability to build "composite applications", which use web services to access information from a variety of sources. Applications built within this framework enable IT teams to rapidly build and deploy strategic functionality that leverage the data accumulated by their information technology platforms.

For example, D&Z's initial effort at a customer portal was built on a standard industry application service provider (ASP) solution. When their largest competitor bought the same solution, D&Z quickly decided to build its own unique portal using the composite application framework. The newly deployed custom portal uses extranet composite applications that draw on business processes and information from D&Z's internal business process platform (formerly, 35 different best of breed applications). The entire process from prototyping until customer integration took a mere 120 days. The customer reaction to this new portal has been enthusiastic. The company's ability to deliver a portal that draws on deep data sets (rather than a stand-alone and relatively disconnected ASP solution) truly differentiates the company in the marketplace. Customer expectations have now evolved to require real-time access to information and collaboration. D&Z's ability to deliver that is now a major reason they are selected as a provider.

The shift to strategic IT is well underway at the case study firms. Whirlpool Corporation's IT team communicated in their interviews with us that they increasingly view themselves in the role of a software vendor in their relationships with business units. Their job is to provide the business units with the unique applications they need to gain and sustain competitive advantage.

IT-Enabled Ecosystem Management

The impact of information technology applications is increasingly being felt in applications that extend outside the boundary of the enterprise. Whirlpool Corporation's IT platform is essential to the management of its massive ecosystem of supply chain and channel partners. D&Z routinely extends its IT platform to manage its extended network of customers. IT is the essential fabric that connects firms to each other, and mediates relationships between customers, partners, and competitors.

The extension of composite applications outside the enterprise creates some particularly interesting opportunities, since deployment is so fast. D&Z provides a series of great examples. In one specific case, D&Z supplies security personnel to a major petrochemical company, mediating between the customer and the large and highly fragmented market of security service providers. Traditionally, security services were perceived as a commodity and selected on a lowest bid basis. However, new pressures

for security, driven in part by 9/11 and the ongoing terrorist threat have started to change this attitude. D&Z recognized this and saw an opportunity to significantly increase the value it provides to its customer by leveraging its differentiated IT capability.

Through discussions with the customer, D&Z found that the customer was interested in automating the security workflow and implementing a solution that centralized site security information. New security requirements issued by the Homeland Security department for high risk industries required them to track and report security incidents across their dispersed facilities. The current manual process of sharing information was not a scalable solution that would meet this requirement. D&Z's differentiated IT team worked with the customer to define the incident information it needed to capture. It then leveraged the employee portal (the portal it uses to collect time data from deployed employees) to add forms for collecting incident data. This data is being rolled up into a management level dashboard that will be delivered to the customer in the next months.

Dade Behring plans to follow D&Z's direction by building a suite of composite applications that provide the end customers with a service to manage the information generated by their Dade Behring instruments. The information management suite would not only connect the devices to hospital information but also download performance data back to DadeBehring. This would provide critical information on how the instruments are running in real time, measure instrument utilization, and automate the re-ordering of instrument supplies as well as maintenance. This is planned to have a critical impact on Dade Behring's bottom line, as well as integrate Dade Behring with its customer ecosystem, enhancing customer value perceived and ensuing customer loyalty.

By leveraging their IT platforms to provide increased capabilities to customers, suppliers and partners, enterprises are strengthening their positions in their ecosystems, increasing value shared, entrenching their strategies, and creating new opportunities for value capture.

In summary, the three themes point to the emergence of a novel "differentiated IT" architecture, which enables IT to play a central role in firm differentiation, business agility and growth. "Traditional" IT architectures have emphasized the deployment of key business applications to enable core business processes such as financial and human resource management. These applications have significantly improved the efficiency of these processes, but not necessarily allowed for business flexibility and strategic uniqueness. Customization of traditional IT has generally been viewed as something to be avoided. Now that this deployment has been accomplished in leading firms, however, standard applications in financial management, HR management, operations and supply chain are gradually being assembled into a new business process platform, which integrates critical information about enterprise business processes, assets, customers, suppliers and partners. This platform is becoming an immensely valuable repository of information, which is being leveraged by the use of composite applications aimed at a

large diversity of critical, "differentiating" functionality, ranging from the enablement of very specific customer needs to currency hedging.

Implementing the New IT

Each of the companies involved in our research is making major investments to move towards this new approach to IT development and deployment. They are integrating traditional business processes and applications and extending them by building a new breed of composite applications. Beyond creating a powerful corporate information network, this reduces maintenance costs and frees up resources for additional strategic tasks.

Sustain effort and investment in the near term (2 to 3 years) to reap longer term rewards

The firm's decision to standardize and integrate basic business processes across global operations is not easy. It requires an ability to sell the future benefits of standardization and integration to management and business units. For management, the potential of cost reductions, increased business intelligence, and improved corporate control must outweigh the short-term increase in costs (a J-curve). For business units, the standardization and integration process often requires that they give up best of breed applications that are heavily customized to support different business procedures. However, business unit benefits of standardization include both the ability to leverage the entire firm's resources (data and functionality) and integrate with other business units. CIOs will win this argument if armed with the right vision.

D&Z, Whirlpool Corporation, and Dade Behring are all now on the upside of the J-curve. Their standardization efforts began as far back as 2001. This is an indication of the length of time it takes for this process to create the opportunity to start the differentiated IT approach.

Outsource what no longer differentiates

The reduction of legacy systems that were once essential to maintenance status reduces costs and frees up IT to focus on new strategic objectives. This is an old pattern. Systems that once provided competitive advantage eventually succumb to commodity or utility status. This was the case with general ledgers in the past, and it is true with many newer applications like basic FMS and HR today. As Whirlpool Corporation IT managers implement, roll out, and stabilize solutions, they often outsource them. Four years ago, Keane, Inc. was selected to manage the maintenance of SAP R/3, as well as EDI and call center applications.

More recently, Whirlpool Corporation signed a 10 year, HR business process outsourcing deal with Convergys. Convergys will provide Whirlpool Corporation with a suite of services including, payroll, employee service centers, benefits administration, workforce planning and deployment, and data integration aspects of compensation and recruitment.

They will also provide support to Whirlpool Corporation's global HR group for performance management and succession planning as well as supporting functions such as vendor management, communications, change management, and compliance.

Refocus your IT staff around strategic skills and task

New roles for IT require new skill sets. New IT capabilities are elevating the visibility and leadership role of the IT organization with the business units and driving a need for strategic skills. Since the business units are no longer able to select, purchase, and deploy applications on their own, the business units must work closely with the IT group to accomplish their business objectives. As the IT group increases their part in business planning, they must be trained in business issues and considerations in order to develop solutions that automate needed business processes and leverage the entire company's data and functionality.

The new IT organization is a business organization. At Whirlpool Corporation, the CIO began his presentation of IT strategy by going through a 30 minute lecture on the priorities of Whirlpool Corporation customers, which clearly drove IT's direction. At Dade Behring, the CIO stated that "he views IT and business as the same thing – aligned". At Intel (a company visited outside of this study), we found that the career path for the company's two CIOs was not through the IT organization. Instead, both did stints in operations, finance, and sales before becoming CIOs. They also divided the duties. One CIO runs operations and infrastructure and the other e-business.

At Whirlpool Corporation and D&Z, new employees hired into the IT organization are required to have a deep understanding of business issues in addition to their core IT skills. This is starting to have a significant impact. For the D&Z IT team, for example, these business skills allow them to actively participate in the development of business plans with business unit management teams. The IT team takes a customer facing role working with business managers and customers to understand and define the business needs and objectives. Next, the IT team evaluates the market opportunity and researches competitor offerings and capabilities. Finally, the IT team uses the customer, market, and competitor perspectives to develop and recommend an IT solution that is economically feasible and offers differentiation from their competitors (see the D&Z petrochemical example above).

This strategic focus also serves as a motivator to attract and retain key personnel. In Whirlpool Corporation's case, it is somewhat constrained by its location in Benton Harbor, Michigan. The ability to offer work on strategic deliverables that make a real difference in the company's performance is helping them accomplish this task.

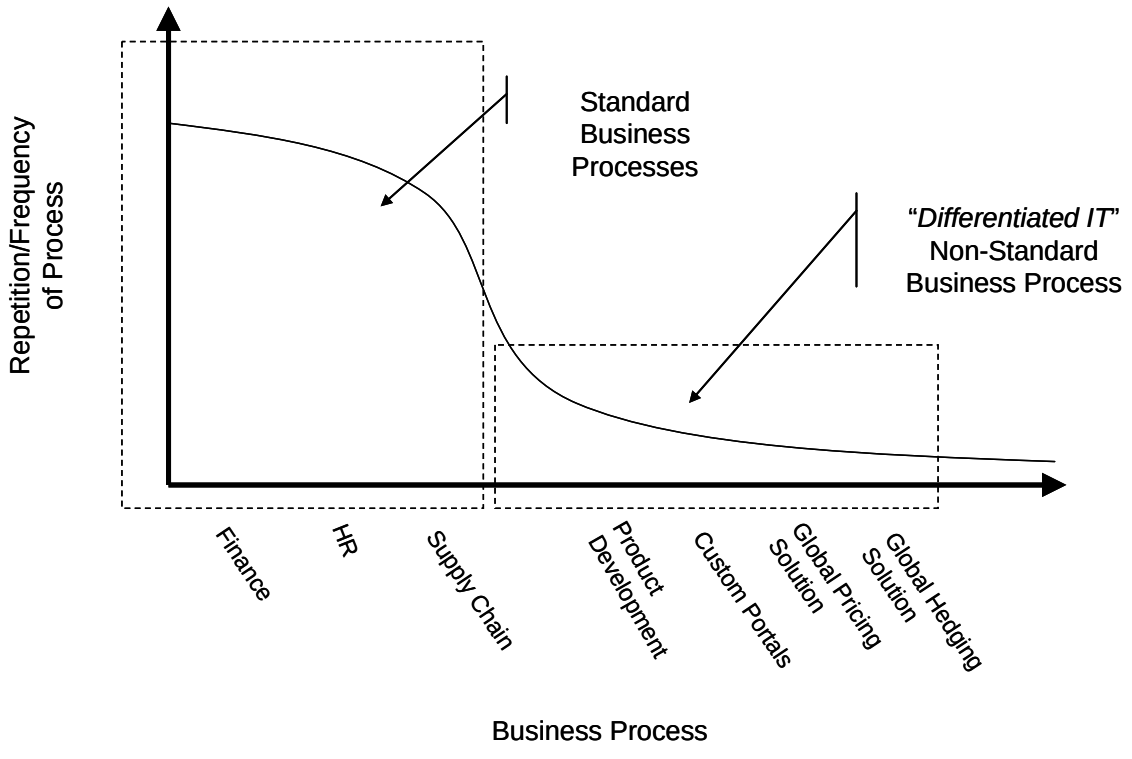
IT's Strategic Role

The bottom line is that IT organizations are offering up unprecedented business information and tackling a new range of business processes. They are providing

capabilities that truly set a company apart and differentiate it from the competition. This is summed up by Esat Sezer, the CIO of Whirlpool Corporation:

> We have spent a significant amount of time honing our organizational vision, building our competencies, focusing on the development of new capabilities, rapidly deploying those solutions globally, and supporting those solutions effectively. We also made huge investments in developing our people. We have an IT organization working on a global scale, and you'll find we've cultivated specific skills that can be applied toward developing *differentiating* capabilities to keep our competitive edge in the marketplace. You don't distinguish yourself by focusing on non-differentiating systems, such as those that take orders, ship orders, or bill orders, for example. While these are mission-critical business processes that we all must do well, you do not differentiate your company from your competitors in this way. They, too, know how to take, ship, and bill orders.

A way to visualize this shift is to graph all the potential processes required to run a modern company. If the x-axis is each different business processes and the y-axis is the number of times a process is repeated within the company, the graph would resemble a power law. The bulk of the processes that IT traditionally paid attention to are the highly repeated ones to the left of the graph (see below). Differentiated IT's target area are the processes with lower levels of repeatability -- the unique processes of the long tail in the graph.



In addition to the need for standardization, an additional prerequisite for differentiated IT is a new application development framework. This framework provides the following:

Easy to customize and deploy solutions:

New composite applications make it easy to build and deploy applications to both internal and external users. These new applications make it possible to ignore the strict workflow and feature sets of best of breed applications. New applications can be built that combine data and functionality that fits the specific needs of an employee's business process workflow. Additionally, these new interfaces make it possible to restrict data and functionality to only those areas that are relevant to a specific employee's workflow. Our case study companies found that most employees only need 20% of the capabilities of any given application they interact with.

This new capability increases the demand for usage. One area of demand comes from the 80% plus of users that need access to a specific applications data and functionality but don't have the special training or expensive application seats necessary to access and interact with it.

Another area of demand growth comes from the increasing levels of alignment between business design and IT design these new applications provide. As employees are provided with customized workflows based on standardized business processes, gaps in automation become more readily apparent. Identification of these gaps and other potential modifications to the automated business process will come from the employees themselves.

It's clear that as the number of employees that receive automation increases and as the alignment process continues, the requirements for rapid development and customization of solutions will increase exponentially.

Highly targeted business intelligence:

The combination of standardization and ease of deployment provides IT organizations with the ability to provide senior management with a plethora of real-time business intelligence tools (via dashboards). Nearly all aspects of business operations are now visible in real-time or near real-time.

These business intelligence applications provide senior management with the insight they need to attempt new business models -- which is listed by corporate managers as a critical ingredient of corporate competitiveness over the next decade. Additionally, these new applications can provide the strategic insight necessary to gain scale economies.

An example of this is Whirlpool Corporation's global pricing solution. The recent rise in the price of oil, steel and other commodities was impacting Whirlpool Corporation's profitability. Between 2003 and 2005, the Producer Price Index for steel increased from 120 to 180 and 100 to 175 for oil. This increase represents an estimated cost impact of

$500 to$550 million for 2005. A price increase was necessary to offset these rising costs. Unfortunately in previous years, Whirlpool Corporation found it difficult to implement and measure the success of increase pricing across its product line in global markets. After it initiated a price increase, the only indication of whether this increase "stuck" with customers was to measure a corresponding increase in top-line revenue at the end of the period. This was clearly insufficient for today's competitive situation.

However, Whirlpool Corporation's platform effort made a solution possible. It allowed the differentiated IT team to quickly build an application that both deployed the price increase to the product lines and measured the effectiveness of that price increase at a market/partner level in three months. This rapid and granular feedback provided Whirlpool Corporation with the ability to respond to local competitive pressures and hold business partners accountable for implementation. In 2005, Whirlpool Corporation successfully implemented a 5-10% price increase across its product lines.

Again, as with the proliferation of easy-to-use applications to historically under-leveraged employees, the number of potential use-cases for business intelligence apps increases the more management becomes enamored with their potential. Whirlpool Corporation's goal to provide management with a 360 degree view of business operations is an example of the ambition.

Shared applications:

The development of easy-to-use applications that leverage standardized corporate functionality and data will also increasingly expand to include the ecosystem of customers, suppliers, and business partners. These applications allow a company to manage and improve their position within their industry ecosystem through the extension of their IT fabric.

The extension of this capability increases the service orientation of the firm relative to their external stakeholders. The performance, quality, and functionality of these applications are often as important as the physical services being delivered. In this new world, the IT team becomes an ASP/ISV to those companies that share its business platform. This requires an important shift in mindset that many companies have not fully embraced.

The upside of this new relationship is that it makes it possible to radically improve the competitive position of the company in the ecosystem. Customers that accept this new service functionality will necessarily invest in its use. Further, differentiated IT has the potential to leverage this new connection with customers to deliver strategic services outside the normal bounds of their relationship. These new custom services can serve as key strategic differentiators.

A great example is what Whirlpool Corporation is doing to manage the price increases and volatility in critical commodities, such as oil and steel used in its manufacturing

process. The insight into this problem was instigated by the global pricing solution described in the previous section. Something needed to be done to manage the commodity risk.

However, Whirlpool Corporation was not in most cases the direct consumer of these commodities. They were bought and used by companies in their parts supply chain. To gather the information on commodity use, Whirlpool Corporation is working with its supply chain to automate usage numbers. Whirlpool Corporation is now in the process of building a hedging application that provides a company-wide view of these commodity purchases (both inside and supply chain uses). This application will provide Whirlpool Corporation with two strategic uses: 1) it can use this data to negotiate in conjunction with their suppliers for volume pricing discounts from commodity suppliers, and 2) it can build financial derivatives that off-set the risk of price volatility for these critical commodities (even commodities they don't directly purchase) in the future.

An ability to develop and deploy services like this requires deep insight into the capabilities of business partners. The differentiated IT team, in this role, will need to act much like an IT services consulting company. Again, there is the potential that there will be a rapid proliferation in the need for custom development of this type. Depending on the customer's (this applies to business partners too), differentiated IT may be required at relatively low levels in the firm.

Challenges

As firms become involved in an increasing variety of IT solutions, the demand for new IT applications will proliferate throughout the firm. Every business unit and almost every function may require the ability to rapidly build and deploy its own differentiated solutions. The firm's IT organization may thus increasingly see themselves as the enablers in the local development of strategic solutions rather than the primary developers of every solution. Over time, the need for "coaching or consulting" from the IT organization (rather than the primary development of solutions) may thus expand, not only to other functions in the organization, but also to business partners and customers.

The need to push the capabilities that enable competitiveness and ecosystem interaction to more people in the company may become a key challenge for IT platforms in future years. Additionally, the growth in demand for highly aligned and strategic composite applications will likely proliferate beyond the ability of the IT organization's ability to deliver. This means that internal and external IT customers will need a new breed of tools that make it possible for people more skilled in business needs than IT development to design new applications.

The drive towards business process platforms will leave those ISVs that are unable to change in the legacy camp. Their applications will quickly become commoditized

modules, ready to be outsourced or decommissioned at the earliest opportunity. Here's a quote from Whirlpool Corporation that sums it up:

> Once we're ready to retire a legacy system, there is quite a bit of work involved in decommissioning it and migrating data and activities to our enterprise IT platform. Our retired systems include PeopleSoft, Trilogy, and Teradata in North America; Forthshift in Asia, Baan in Latin America, and several homegrown procurement and planning systems in Europe.

Conclusion

IT enabled business process platforms are being created across enterprises, establishing IT's new strategic role. This process will inevitably increase the alignment between corporate design and IT design as everything from data definitions to business processes are documented and implemented across the corporation. This alignment will make it possible for management to gain critical insight into business processes performance. It will also make it possible for IT to build applications that leverage the entire firm's IT resources for strategic gains.

New development tools that allow IT to rapidly develop unique applications will accelerate the creation of more information technology that is truly differentiating. These new applications will not only continue to improve the alignment of the firm's business processes, but will also create the opportunity for radical improvements in competitive position.

Over the long run, rapidly growing demand for new applications and enhancements to existing automation will require that IT teams adopt the role of coach and enabler to their firm's local development efforts, rather than as the firm's primary development arm. Enterprise ISVs will need to recognize this trend and develop new tools that enhance the activities of differentiated IT.