

Ford Motors Case Study

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Background (General Facts) Ford Motors is one of three leading automotive manufacturing companies in the United States. Based in Michigan in 1903 by Henry ford and grew to reach revenue of \$150 billion and more than 370,000 employees by 1996 [1]. In the 1970's, the automobile market for the major auto makers - General Motors (GM), Ford, and Chrysler- was crunched by competition from foreign manufactures such as Toyota and Honda. In 1999, Ford acquired the Swedish Volvo model in an attempt to compete in the foreign market and expand to other regions. Furthermore, Ford launched a full organization re-engineering business process plan called "Ford 2000" aiming at reestablishing the company's infrastructure. The process meant reduction in their Vehicle Centers (VCs) to only five covering the operations that spanned 200 countries. It also meant cutting redundancies and requiring Information Technology (IT) to be the driving force and the link between Ford centers worldwide. In building Ford's IT infrastructure, the company focused on implementing a setup that supported the TCP/IP communication protocol based on the U.S. department of Defense requirements. At those days, Ford internal network was meant to serve files transfer unlike most companies that used the network mainly for email communications. Throughout the 1990's, Ford developed a cost effective Global Enterprise Network Integration (GENI) process to link all its locations compromising on the type of the connection and the cabling in favor of full coverage. During the same time, Ford started building its Web Farm, which was basically a set of hardware and software managed by a team for building Ford's public website. The work started by publishing documents for technical references and moved to more advanced images from a live auto show. As a result, the website received 1 million visits a day in less than 2 years after its official launch. Throughout the end of the 90's, Ford established its web services by increasing the amount of information published, building more intelligent and standard web application in 12 weeks period, purchasing more Netscape browsers for setup on its users' machines, and creating a B2B server to allow the suppliers secured access to Ford's Intranet. In the path towards service cost reduction and bringing more business through the web, Ford worked closely with its competitors in the U.S. market GM and Chrysler to establish what came to be known as "Automotive Network Exchange" (ANX) certificate. The protocols aimed at providing a unified communications standard through the Internet to enable suppliers to provide common technology for all manufacturers. Moreover, Ford focused on making information on its web site more accessible and useful by deploying a team to manage the process of adding and updating information based on an analysis of how humans deal with information. One final aspect of Fords endeavor was to try to build a model through its infrastructure that benefited from the model implemented by Dell computers to improve their supply chain and delivery process. The direct model would not work well for automotives as it would with computers, as a result Ford worked on its retailing network remodeling and identifying what would eventually give it the extra edge in delivery time.

Enterprise Architecture Issues Ford's regional expansion to address the competition for market shares demanded cost management for the infrastructure upgrades IT infrastructure places limitations on the type of application development based on the platforms Easy access to information and prompt delivery of vital data to key individuals requires proper knowledge management Organizations reengineering and process remodeling is necessary when adapting new technologies to maintain the cost and increase efficiency Supply chain errors and delays can severely affect the progress of the business and the market value of the corporation

Analysis Infrastructure Upgrade Since the inception of the Internet in the 1960's, much effort has been made in standardizing how computers connect to it. In 1982, the International Organization for Standards (ISO) realized that during that period many ad hoc networking systems were already using the TCP/IP protocol for communications and thus adapted it as a standard in its model for the Internet network [2]. The main driver for IP convergence, at that period, was the growth in data traffic through wide area networks (WANs) established by local companies. Furthermore, in 1991, the Internet was open for commercial use, and that demanded a reduction in the total cost of operating the network to cope with 1 million Internet hosts that materialized in only 1-year time. Telecommunications companies like AT&T understood the potential and worked on standardizing the network offering voice services over IP networks that managed the separation between voice and data transmission [3]. At the same time, Ford had launched its plan to update its infrastructure, and seized the opportunity brought by the global movement of integrating the voice, fax transmission network with data transmission and expanded its WAN to include its

offices in Europe and elsewhere. The financial benefits also came from the fact that Ford adapted the TCP/IP protocol from the beginning and made sure that all its technical infrastructure upgrades adhere to the standards. This made the transition of its system to the Internet as cost effective as it could be.

[**-pagebreak-**] **Web Technologies** Intranets employ the hypertext and multimedia technology used on the Internet. Prior to 1989, when Tim burners-Lee invented the Web [4], most applications used standard development languages such as C and C++ to create desktop applications that were proprietary and dependent on the platform. For example, applications running on a command-based operating system such as UNIX would not run under Windows, and those working for PCs might not work on Apple computers and vice versa [5]. The invention of HTML (Hyper-Text Markup Language) introduced a new model for applications that conform to the standards provided by a single program, the "Web Browser". Unlike standard applications, the browser brought a unified interface that had a very fast learning curve. Users seem to require no additional training to work with web browsers. Furthermore, system administrators did not have to spend time installing upgrades on users' machines, since the Intranet client/server architecture facilitated all the updates through the connection with the web server [6]. Since Ford established its Intranet, it was aiming at building web applications through the initial analysis of "Mosaic", the early form of web browsers. The technical department at Ford used web languages to create the first web site in 1995. In 1996, the team started building applications making use of the unified "Netscape" browser that was deployed on all machines at the company, and working on a standard template to cut on the development life cycle. There was a substantial cut in training cost due to the user-friendly interface of web applications. Furthermore, the speed of development made vital applications available to different individuals across the company. For example, the B2B site allowed suppliers remote and secured access to various sections of Ford's Intranet. In addition, the development team created an application as a virtual teardown on Ford's website where Ford's engineers could examine parts of competitors' cars and evaluate any new technologies. The alternative would have been an actual trip to a physical location where Ford tears down cars to examine the parts. **Knowledge Management**

While there are many definitions for knowledge, each company might adapt its own based on how it analysis data and information to acquire knowledge. The University of Kentucky, for example, defines knowledge as "a vital organization resource. It is the raw material, work-in process, and finished good of decision-making. Distinct types of knowledge used by decision makers include information, procedures, and heuristics, among others... " [7]. Organizations go through different activities to manage the amount of information they collect to form the knowledge base of the company. Activities include creating databases of best practices and market intelligence analysis, gathering filtering and classifying data, incorporating knowledge into business applications used by employees, and developing focal points for facilitating knowledge flow and building skills [8]. Ford was excited about the traffic it was receiving on the Web site and everyone was publishing all the material they have on desk on the Intranet. Nevertheless, there was a growing concern about the usability and usefulness of the material people were adding. As a result, Ford created a "Knowledge Domain Team" to build complete information in nine areas that were identified as vital to the business. The process Ford took was based on surveys and specialists input in how people perceive information, and what is considered vital and what is distracting in the structure of Ford's website. The aim behind the initiative was to reduce the time individuals spent in searching for information through proper indexing of the website content, and making sure that what was important could be accessed in due time, and what is trivial did not overwhelm the researcher with thousands of results.

[**-pagebreak-**] **Business Re-engineering** In the area of organization's re-engineering process innovation is the set of activities that achieve substantial business improvements. Companies seeking to benefit from process innovation go through the regime of identifying the processes, the factors for change, developing the vision, understanding the current process, and building a prototype for the new organization. History shows that organizations who define their processes properly will not have problems managing the issues and developing the change factors [9]. When introducing technology, business redesign is necessary. The industrial fields have been using Information Technology to remodel processes, control production, and manage material for generations. However, it is only recently that companies recognized that the fusion of IT and business would go beyond automation to fundamentally reshaping how business processes are undertaken [10]. When foreign companies were allowed to compete in the U.S. market, Ford understood that to succeed in business in a competitive arena it needed to implement strategies that competitors find difficult to imitate [11]. As a result, Ford bought Sweden Volvo to enter the European market, and partially owned Mazda to have a competitive edge with Japanese cars1 [12]. To achieve that it re-engineered its production development activities and

global corporate organization and processes for dramatic cost reduction. Furthermore, it understood that expansion requires collaboration and alignment, and thus planned to establish the IT infrastructure through a WAN that connected all the offices. In the process of innovation and re-engineering, Ford has set policies to manage the cost of establishing the network, built models for continuous implementation, and organized global meetings to align all parties with the process. Adding to that, when it came to managing the website, Ford facilitated an awareness campaign for all the branches to understand that Ford is using the web to collaborate and research and adapting information technology as a way to maximize its business value. The goal for Ford was to maintain its leadership in the market and to do that in the most efficient and cost effective method that is there. **Supply chain management** Supply chain management (SCM) is about coordinating between suppliers, manufactures, distributors, retailers, and customers [13]. The basic idea that SCM applications revolve around is providing information to all those who are involved in making decisions about the product or goods to manage delivery from the supplier to the consumer [14]. Studies show that reducing errors in supply chain distribution, increases revenue, enhances productivity, and reduces the order-to-fulfillment period [15]. Ford often compared its supply chain process to that of Dell's, in an attempt to close the gaps in its own process and reach the level of success Dell has reached. The difference in the distribution model between Dell and Ford lies in the middle link of using retail shops. Since Ford cannot skip retail as a focal distribution point, it worked on establishing a network of retail shops that it owned. Ford made sure shops are not affecting each other in terms of sales, and gave them all a standard look and feel to establish itself in the consumer's market as a prestigious cars sales retail company. Furthermore, extensive re-engineering initiatives were undertaken to enhance Ford external network by eliminating the correlation with smaller suppliers. In that way, Ford made sure that key suppliers have access to forecasting data from customers' purchasing trends and production information to enable a faster order-to-delivery cycle. Ford vision was to create a model that allowed flexibility, predicable processes and delivered the product at the right time to the right consumer.

[-pagebreak-] **Conclusions** Ford is an example of how traditional organizations can mature to adapt what is current and maximizes the business value. The process that Ford went through necessitated the continuous support from management. In addition, it depended on alignment between those involved as a key for success. The correlation was not restricted to internal staff; it extended to cover competitors to reach mutual benefits, to work with suppliers to maintain similar grounds and adequate infrastructure, and to create training programs to educate all on the vision and organization's objectives. Ford technical progress came at a time where the Internet was yet to reach its full potential. The introduction of Fiber-optic cables in the late 90's and the substantial increase in bandwidth would have helped Ford and cut on the cost in endured connecting its own offices. Furthermore, the ISP services that provided hosting servers were limited to only few players, which explained why Ford preferred to manage its own web server and maintain the overhead of the 24 hours uptime and backup. From this case study, I understood the level of commitment large firms have to maintaining their position in the market. These companies know the revolving nature of business in the sense of how easy it is to fall back if they did not keep up with the change. The Ford process also shows the need for quick and resourceful thinking when faced with situations that might seem to be unfavorable. The way Ford ventured into the foreign market by acquiring local manufacturers was a strategic decision that did not only enabled Ford to merge with different technologies, but it also saved it the additional cost of establishing production centers in Japan and Europe.

Recommendations Maintaining leadership in the market requires innovative organizations willing to reengineer to succeed. IT fusion with the business means restructuring and remodeling to understand the role IT would play to meet the business objectives Planning and modeling is vital when coordinating work with large teams. Constructing websites is not about content; it is about understanding what adds value and how humans interact with information. Knowledge management is a plan that companies need to develop as part of their initial business process modeling It is not wrong for large firms to try to adapt to successful processes implemented by other firms. **References** Robert D. Austin and Mark Cottleer, "Ford Motor Co.: Maximizing the Business Value of Web Technologies." Harvard Business Publishing. July 10, 1997.

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