

Human-Centric E-Business

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INTRODUCTION

This article studies the transformation processes occurring in industry and business at large. It deals with the social and economic challenges, and explores the new concepts arising from an unprecedented technology revolution underpinned by advances and innovation in ICT. In addition it sets the scene for a new era of industrial capitalism.

Over the last decade of the twentieth century, a large number of companies faced the future with trepidation while others lacked a good strategy (Possl, 1991; Kidd, 1994; Ashkenas, 1997). Many changes had taken place including Just In Time (JIT) manufacturing and logistics, lean manufacturing (Womack, Jones, & Roos, 1990), shorter product lifecycles (Davenport, 1993), more intelligent approaches to IT (Drucker, 1992; MacIntosh, 1994; Nonaka, 1998), and costing (Wilson, 1995; Ansari, Bell, & the CAM-I Target Cost Core Group, 1997), but making money was becoming more and more difficult. It was a time and climate for dramatic new approaches (Warnecke, 1993; Drucker, 1994; Goldman, Nagel, & Preiss, 1995) with greater agility. New technologies were replacing old at a faster rate, and information technology provided better management and control vision, albeit on a limited local scale (Arguello, 1994; Leachman, Benson, Lui, & Raar, 1996; Makatsoris, Leach, & Richards, 1996). Also, push to pull manufacturing (Mertins, 1996) distinctly changed the approach to customers and service, which increased competitive and economic pressures resulted from the global reach of customers, manufacturers, and service providers keen to exploit the wealth of opportunities in both global markets and differences in worldwide regional markets (Bitran, Bassetti, & Romano, 2003). Even players only operating in local markets (Bologni, Gozzi, & Toschi, 1996; Zabel, Weber, & Steinlechner, 2000; Bonfatti & Monari, 2004) could not resist the tide of change. As a result many companies and economies (Hutton, 1995) were in a state of upheaval, and as a consequence some fell by the wayside. This was a climate in which there was an uncertain outcome, and it was into this melting pot that the Internet and the World Wide Web (WWW) were to produce an environment for a much-needed revolutionary change in the industrial approach.

Later, broadband for landline and also wireless networking provided a much-needed speedier access.

Businesses looked to the wider horizons and the dynamics of their supply chains as well as their markets to discover new ways of working with both customers and suppliers, to grow and remain viable. The diverse industrial, commercial, and operational practices and processes needed to be remolded. And the collaborative aspects of external relationships to the advantage of company performance and the creation of new opportunities were the ones to be targeted. This resulted in increasing use of new forms of communication and innovation in multimedia technologies. In this unsettled environment, once fear of change had been forced into the background, chaos became the domain of creative experimentation (Weiland-Burston, 1992). It is during this period of confusion and anxiety that the process of metamorphosis started to take place.

A surge of new software tool ideas have helped, including Enterprise Resource Planning (ERP) Supply Chain Management (SCM) (Chang, McFarlane, & Shaw, 2001); Customer Relationship Management (CRM) (Greenberg, 2002); electronic commerce (e-commerce) and procurement (Chang, Makatsoris, & Richards, 2004); extensions in order management, fulfillment, and demand lifecycle control (Makatsoris, Chang, & Richards, 2004a, 2004b; Makatsoris & Chang, 2004); electronic business (e-business) (CEC, 2000); and new forms of conducting business, among many others. Further, mobile devices have enabled access to systems and software from any place in the world, and these technological improvements are transforming the way people work. All of these have stimulated the reformation of business attitudes to the flow of goods, services, information, and knowledge (Hardwick, Spooner, Rando, & Morris, 1996; Richards, Dudenhausen, Makatsoris, & de Ridder, 1997; Bouet & Martha, 2000; Johnston, 2001; Introna, 2001; Zobel & Filos, 2002).

BACKGROUND

Life has become more hectic: the hustle and bustle of global business, developing everyday situations, and worldwide

instant news coverage have intermingled business with leisure more than ever before. Collaboration, especially e-collaboration, is very important for today's business. It can take place at any time between enterprises and organizations, and moreover can be between people who are located in different places around the globe. But people are different and are motivated in many different ways, as well as having to work in multi-tasking environments within a variety of e-collaboration activities. Understanding how to work effectively with others in modern industrial and service-oriented society is key.

To bring about real benefits to society and business, modern communication means will need to be improved, extended, and seamlessly integrated with support services that can speedily call upon suitable tools, models, data, information and knowledge, and visualizations of entities from anywhere and at anytime to match priority and context. These will be the new e-collaboration environments, or electronic collaborative working environments, that are human centered and intuitive for the practical use of people, teams, and heterogeneous groups in an enriched virtual world serving them in their everyday tasks.

THE VISION

An enterprise network in an e-business context must be considered holistically with respect to its scale and scope to enable better e-collaboration across all its nodes and enable efficient and sustainable operations (Ballesteros & Richards, 2006). However, understanding and embracing people's needs is critical to support human interaction in such working environments (CEC, 2005, 2006). This calls upon the development of better and newer forms of approaches that are in stark contrast to existing approaches and practice. The transformation process involves bridging the gap between the way people think and work with others with the emergence of virtual service-oriented collaborative working environments. The challenge though is to have more than just an intuitive interface. To be human centered is more about having the right services with responsive personalized features in a fully immersive virtual environment that must be designed and implemented with full involvement of the real users.

THE CHALLENGES

ICT tools and systems are important enablers (CEC, 2000) in enterprise management and the transformation processes taking place. They have played and will continue to play a major role in the emergence of new ways of conducting business and ensuring their sustainable development. However, open global standards, protocols and interfaces, interoperable applications and platforms, trusted and sustainable infrastruc-

ture, and compatibility between business practices must be developed before interconnection for broader-based business is fully realized (Frick & Lill, 2000; Kidd, 2001).

However, innovative ICT alone is not enough. The necessary social and organizational changes to business (McCarthy, 1996) are at least as significant and are enabled by ICT. For instance, a Web-like organizational network has emerged from the more loosely coupled supply chains of the 1990s. The adaptive value network (Makatsoris, 2004) and virtual enterprise permit new forms of communication, participation, leadership, and decision making to develop. In turn these create new economic balances, shared learning, and new procedures embracing human involvement rather than strict structures dictated by inflexible ICT, which would just collapse space and time (Franke, 2001; Duttas, 2001) and increase resistance to change that must be overcome (Hunziker & Sieber, 1999; Deloitte & Touche, 2000).

Three basic aspects to change have emerged, before smarter business is accomplished, to drive the change process. These are developing in parallel to carry business forward to the future.

- **Organization:** How organization and inter-company relations are developed to ensure greater collaboration—that is, working jointly together, cooperating, and coordinating; trusting each other; sharing information and knowledge where appropriate and refining the skills in the organization to cope with the economics, strategic aims; and increasing the rate of innovation, day-to-day operations, and service excellence.
- **Information and Communication Technologies:** How tools and systems are created, developed, and introduced to ensure open, effective, and efficient dynamic engagement between companies, using all the appropriate communication channels open to them as necessary and of preferred choice. This applies in business networks, supply chains, and value networks, as well as at the retail end where new opportunities may be found. Such opportunities include competencies and innovative products and services that can enable the creation, enlargement, or optimization of adaptive value networks. For example such tools include, among others: distributed planning, distributed event-driven decision assistance and tracking, demand lifecycle control, collaborative management of uncertainty and risk, and collaborative design and provision of an environment for context-based e-collaboration services which can rapidly switch the context of working on demand.
- **Environment:** How exclusivity may be stripped away to provide global trade opportunities for all in the world of electronic trade, not only buying but also selling to any region or nation irrespective of differences in

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