

# Integrating Operations and Information Strategy in e-Business

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Businesses today operate in a fast-evolving environment where Internet-based technologies are not only ubiquitous but are having a fundamental impact on the way that businesses manage their operations and compete. An ever increasing number of organisations, whether dotcom start-ups or established businesses, are becoming e-businesses. Operations management academics have always highlighted the strategic importance of operations, and its role in corporate success. Consideration of operations strategy surely has no less importance in e-business than in traditional business. Yet there is evidence from practice that many companies have adopted e-applications without thinking through their strategic impact. Similarly, operations strategy theory appears to have done little to adapt to the changes wrought by the advent of Internet-based ICT. This paper considers what impact the Internet has had on operations strategy and whether new strategic thinking is required in response to the powerful external forces that are re-shaping industry. The paper postulates that new thinking is required and that effective operations strategy must now also integrate the consideration of information systems strategy within its subject matter.

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## Introduction

Although Skinner (1969), through his seminal article *Manufacturing: the missing link in corporate strategy* is the acknowledged originator of the concept of operations strategy, Hayes and Wheelwright (1984) did much to define its content through their book *Restor-*

*ing our Competitive Edge*. Their identification of strategic decision categories for operations, including distinguishing between structural and infrastructural elements, set the agenda for the next two decades. However, the book is very much rooted in its time, its major concern being how US industry ought to respond to the threat from foreign, principally Japanese, competition. In the 1980s, American manufacturing industry was, perhaps for the first time, a victim rather than a beneficiary, of the forces of global competition. Hayes and Wheelwright's underlying message was that new strategic thinking was required in response to powerful external forces that were changing the shape of US industry.

The new millennium poses many challenges for operations management. One key question however, is does the Hayes and Wheelwright strategic framework, postulated for operations in the 1980s, still hold good? Today, industries of all kinds, services as well as manufacturers, all around the world, are subject to the powerful forces unleashed by the technological advances underpinned by the Internet and the seemingly relentless tide of liberalisation and free trade that are creating a new global information economy. As such, today's business environment is different to that of 20 years ago. One consequence of the information age is the greater availability of information to consumers as well as businesses. Advances in computer processing capability, software, access to public information infrastructures like the Internet, all mean that the information available for firms' utilisation has grown, and continues to grow, at a rapid rate. This new economy has given rise to many new business models, particularly in commercial trade. Traditional organisations have had to adapt to survive, and completely new kinds of organisations have been spawned in this new environment. Similarly, thinking about organisational strategy must

also change in response to the new corporate landscape. As [Sampler and Short \(1998\)](#) state, the new 'information-driven competitive dynamics require researchers to develop new theoretical constructs and managerial perspectives to re-evaluate the firm and its extended set of relationships [because] failure to manage information and information-related resources can produce undesirable side-effects.'

From [Skinner \(1969\)](#) to more recent times, operations management academics have always highlighted the strategic importance of operations, and its role in corporate success. The consideration of operations strategy can surely be of no less importance in e-business than in traditional business. Yet there appears to be a distinct lack of literature focussed on the strategic implications of e-commerce for operations management. As [Spring \(2000\)](#) notes in an editorial in the *International Journal of Operations and Production Management*, 'it is high time we as a discipline provided some critical analysis'. Yet much of the current literature still remains prescriptive, often superficially so, concentrating on computer software and infrastructure solutions, or 'defining the borderlines of e-commerce, classifying the ways it takes place, outlining the complementarities between the features of the traded goods and the growth potential of specific businesses' ([Mariotti and Sgobbi, 2001](#)), rather than focussing on strategy which is based on established theory and practice. And there is also considerable evidence that many companies have adopted e-applications, without thinking through their strategic impact. As [Lumpkin et al. \(2002\)](#) say, 'perhaps the most important question is how to strategize in the era of the Internet'. This in turn raises the question of whether 'the rules [have] changed or can traditional models of competitive strategy be used to achieve sustainable advantage?' (*Ibid.*).

In fact, thinking about operations strategy appears to have moved on very little in the last 20 years. The lack of advance in approaches to operations strategy ought now to be, with the advent of the new economy, a matter of particular concern. Urgent consideration needs to be given to the strategic impact of changes wrought by the Internet on operations. [Loebbecke and Powell \(2002\)](#) state, 'while the pressure may have eased as the frenzy of "dotcom" activities has subsided, the search for business models and for profit from the Internet continues'. So if, as is often asserted, the Internet changes everything, what has changed in operations strategy? Some twenty years on from Hayes and Wheelwright, what new strategic thinking is once again required in response to the powerful external forces that are re-shaping industry?

This paper sets out to explore the strategic implications for operations management of the growing use of the Internet-based information and communications technologies (ICTs) on which the operations of e-businesses are based. The paper opens by considering the key features of the global information economy and discusses the challenges of doing business in this new economy. In the light of this analysis, Hayes and Wheelwright's strategic decision areas for operations are then examined to determine the extent to which they are still relevant in today's global information economy. The paper concludes by suggesting new ways in which the consideration of operations strategy might be framed in the new economy, examining in particular, how ideas from information systems strategy might be integrated into operations strategy.

## The Global Information Economy

Recent and rapid advances in the application of ICTs, with the Internet being the most ubiquitous, have created a world notable for its high degree of connectivity, especially in the United States and other advanced economies. As [Negroponte \(1995\)](#) puts it, we have entered the age of the bit. The bit has 'no color, size or weight and can travel at the speed of light, the smallest atomic element in the DNA of information.' As information has become smaller, the domain of its dissemination has become larger. This phenomenon of inter-connectedness, used for economic purposes and based upon information and the associated technologies required for its dissemination and retrieval is variously referred to as the 'new economy', the 'information economy' and the 'global information economy'. Modern day economic transactions and relationships are thus both global and informational in nature. And e-businesses are the epitome of new economy organisations. E-business are engaged in:

Marketing, buying, selling, delivering, servicing, and paying for products, services and information across (non-proprietary) networks linking an enterprise and its prospects, customers, agents, suppliers, competitors, allies and complementors. ([Weill and Vitale, 2001, p. 5](#))

As such, they are characterised by their extensive use of the Internet-based ICTs that underpin the new global information economy. Debate is ongoing about the extent to which the technological advances are themselves responsible for the creation of this new economy. Some, for example [Lyon \(1998\)](#), have disputed the concept of 'information society', asking instead 'Does IT bring about a new society without

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