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Gezinus Hidding
Loyola University - Chicago

George Nezelek
Loyola University - Chicago

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Business Practices in Information Industries

Gezinus J. Hidding and George S. Nezlek

Loyola University Chicago

What is happening is the rise of an entirely new “system for wealth creation.”

[Its appearance undermines] every pillar of the old power system, ultimately transforming family life, business, politics, the nation-state, and the structure of global power itself.

The changes we have recently seen in business, the economy, politics, and at the global level are only the first skirmishes of far bigger power struggles to come.

-Alvin Toffler

Abstract

Industries with products that consist solely of information are the purest case of doing business in the Information Age. Current business thinking is generally (still) rooted in the Industrial Age, which was concerned with producing physical goods. Research into the business practices of Information Businesses is scant at best. This paper outlines the motivation to define a research agenda to understand the business practices of the Information Industry.

Introduction

As the Industrial Age winds down, increasingly pervasive phenomena such as the Internet and e-commerce herald the dawn of the Information Age. The literature increasingly mentions “knowledge” and “information resources.” However, the Information Age paradigm has not yet been translated into new business thinking and management theories.

Current business models are (still) rooted in Industrial Age physical goods and production processes. For example, the well-known “Core Competence” concept [6] was based on examples of physical goods companies (e.g., Honda). The consideration of chaos theory and complex adaptive systems [1], arguably important concepts for the Information Age, are still described in cases of physical goods companies (e.g., Hewlett-Packard).

In strategy research, few theories even acknowledge the transition, despite increasing pressure on organizations to respond to faster rates of change. The dominant strategy theories [5] (e.g. Industry Structure Analysis, a.k.a. Five Forces) are static models. More recent theories (e.g., the resource-based theory of the firm), acknowledge that

customers, environments, and firms change, but do not concern themselves with the rate of change. A recent conference and subsequent book on Fundamental Issues in Strategy [7] did not examine Information Industries in any detail. Thus, the dominant strategy research is still rooted largely in the Industrial Age, with some exceptions, as noted in [3].

The underlying paradigms of the Industrial Age and the Information Age were contrasted in [4] [8] [9]. While the Information Age is in its infancy, the Industrial Age has existed for over a century. Business practices of the Industrial Age are much clearer. They were designed for large firms, making highly standardized physical goods, in large capital-intensive plants (e.g., steel-mills). Changes in products and industry structure occurred somewhat gradually. In contrast, the Information Age is (at present) characterized by small, fast-moving firms, making what amount to personalized information products, in small, knowledge-intensive offices. The emphasis is on economies of scope rather than economies of scale. Such firms contribute a substantial portion of the growth in the economy and in employment. However, the business practices that are appropriate for Information Industries have not been studied to any significant extent.

Motivation

So much has been written about the transformation of information systems from reactive record keeping necessities to proactive competitive weapons that there is often a tendency to assume the necessary success stories have been sufficiently documented. The classic business process re-engineering case studies using information technology (e.g. Ford, Federal Express) are all but a mantra to many business disciplines. The fact that businesses of all types deploy information systems to support their core processes is universally accepted. However, all of this ‘classic’ research is in the context of organizations that produce physical goods or provide traditional service products. There is virtually no literature that considers what to do when there is no physical product or tangible service in question. In other words, what should an organization do *when information is the product?* This vacuum is evident at both the theoretical and practical level.

Information requirements reflect an organization’s business *strategies*. Information systems (the selection of

an appropriate infrastructure and the techniques that are used to satisfy those requirements) define an organization's *tactics*. Research frequently seeks to identify the degree to which tactical choices succeed in achieving the strategic goals, and ways to map appropriate tactical options to strategic issues. Proper tactical selection allows organizations to respond more rapidly to changes in their environments. This is of considerably greater importance to the information businesses, where shrinking product cycle times demanding rapid response are the norm rather than the exception.

Are the appropriate strategic and tactical options different for information businesses? Should they be? Indeed, what are they in the first place? These questions need to be addressed for the information businesses that comprise a significant and growing portion of the domestic as well as global economy.

Why Information Industries Must be Studied Separately

The developed world is in transition from the Industrial Age to the Information Age. Manufacturing is typically less than 25% of most developed countries' GDP. The industrial profile of the United States now resembles what used to be considered a third-world economy, with principal economic non-industrial activities in services, recreation & tourism. Use of the World Wide Web and the Internet is growing exponentially. The most influential firms no longer produce physical goods (General Motors) but deal with the creation and management of information (Microsoft).

The emerging Information Age paradigm has not yet been translated into new business thinking and management theories. New strategies and objectives need to be formulated and the new tactics to attain them need to be clearly defined. The driving force for this is the difference between the Information Age and the Industrial Age. In the Industrial Age, products were physical goods and assets were tangible (e.g. cars & factories). In the Information Age, products are information and assets are frequently intangible (e.g. information & knowledge). Their underlying economics are very different [2], because each unit of a physical good has a non-trivial marginal cost for the raw materials required for its production. The resulting price of the physical good is based, to some extent, on that marginal cost. In contrast, *each unit of an information product has an effective marginal cost of zero*. The price of an information product (after unit one) is based purely on demand. Internet-based delivery of information products (e.g. telephone directory services, Mars Observer images, and

special prosecutor's reports) presents but one example of this phenomenon.

While it may not make any sense to apply (old) business practices designed for physical goods production to information businesses, the appropriate (new) business practices are not yet clear. Few if any references to research into the workings of the Information Industry are to be found in contemporary literature.

Ultimately, it is important to better understand how organizations should operate in the Information Age. It is important to study the "pure" form of an Information Age organization, i.e., involved exclusively in the production and distribution of information. However, it is most important to learn which business practices are different between traditional goods and services industries and Information Industries. Similarly, it is important to recognize the differences between the role information systems play in industrial organizations and information organizations. In the former, information is used to support primary business activities. In the latter, producing and selling information IS the primary business activity. It is by no means obvious that business strategies and information systems tactics will retain their present relationship in the coming Information Age. It is therefore necessary to study not only the strategic shifts, but the tactical ones as well.

Conclusion: An Evolving Research Agenda

The transition from the Industrial Age, with an emphasis on tangible products and services, to the Information Age, with an emphasis on intangible information goods, will require the development of new management theories that define the practices of successful firms in Information Industries. These theories will need to account for differences in products, industry structures, and the underlying economics of the Information Age.

This paper by no means identifies all of the cogent variables for the new competitive equation, but has shown the need to articulate a more comprehensive research agenda for the study of Information Industries. An initial literature survey reveals a decided lack of consensus regarding terminology that must be addressed in order to develop a consistent set of reference literature.

As part of their evolving research agenda, the authors plan to identify and study firms that are purely information-based. It is also useful to consider firms that are producers of physical goods or service providers as well as information, provided that the managerial structures of these firms adequately separate the information industry components from the goods or services components. An

initial interview-based study of senior management of appropriate organizations will identify relevant issues to be addressed by subsequent surveys and case studies, as well as to frame more specific hypotheses for future research.

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References

Detailed reference information is available on request from the authors at:

ghiddin@luc.edu or gnezlek@luc.edu