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WHAT IS KNOWLEDGE AND THE TECHNOLOGY TO SUPPORT IT WORTH TO THE FIRM?

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A Review of Valuing Technology: the New Science of Wealth in the Knowledge Economy

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The coming of knowledge economy is evidenced at many levels. At the national level, we see a surge in information and service industries (from the perspective of GDP contributions) and in employment of knowledge workers. At the firm level, increasing IT investments since the 1980s, the rise of the Internet and WWW, and the popularization of knowledge management and IT-enabled strategies are all speaking loudly for a new economy in which competitive advantages are rooted in knowledge and intangibles.

Traditional financial accounting approaches to valuing the firm are no longer sufficient for reporting the business value of knowledge organizations. These approaches were established well before the rise of IT and the advent of the knowledge economy and were intended primarily for production oriented businesses. This insufficiency leads to a significant distortion in the reported value of

the knowledge organizations, as evidenced by recent huge gaps between the market capitalization and book value. New valuation approaches are called for.

Valuing Technology is about the valuation of knowledge-intensive corporations in the age of knowledge economy. What is the value of a knowledge intensive business? What are the forces in the knowledge era that degrade the competence of traditional financial accounting approaches? How can we tackle the problem of valuing knowledge intensive businesses? This book points out possible directions in searching for the answers.

As a start, Westland identifies four types of 'scaling,' technology acceleration, intelligence scaling, geographical scaling and organizational scaling, which have profound influences on the value of knowledge organizations. The most prominent example may be that of the Intel CPUs, characterized by Moore's Law, which keep driving down prices of existing PC models. In the book, this phenomenon is conceptualized as "technology acceleration," the exponential improvement of technology over time.

The book goes beyond the examination of individual technologies to two even more interesting topics, the acceleration of

converging technologies and knowledge acceleration. How can we measure the closeness of two converging technologies, for instance, the Internet and the mobile devices? How can we estimate the acceleration of converged technology like the mobile Internet? And, more importantly, how do these make a difference in valuing knowledge business? The author addresses the first two questions with a clear and applicable mathematical representation and the third one by suggesting insights into the depreciation approach and continuous time valuation.

Unlike technology acceleration, which makes the value of existing knowledge assets diminish quickly, knowledge network and network externality can equip businesses with sustainable sources of value. Internet technologies, or more generally computing and communication technologies, have enabled the creation of a gigantic network of data, information, and knowledge. Many phenomena in the knowledge economy can be described and explained by network economics. The book argues that by tapping into the global knowledge network, individual knowledge workers and knowledge organizations can “scale-up” their intelligences. Moreover, network externality in the product/service market can provide business with sustainable competitive advantages and dominating power. The value of the network, which changes in proportion to the square of the network size, can influence the value of a knowledge business dramatically when critical mass is reached. How does critical mass make a difference? How can we take into account the contribution of network externalities when valuing knowledge business? This book provides evidence for the existence of critical mass in the software industry and a discussion about how it acts in different e-commerce business models such as Ebay.com and Amazon.com.

The other two influential forces are geographical and organizational scaling, as characterized by the shrinkage of the world, the creation of new market channels, and the flattening and downsizing of the firms. Both have significant impacts on different aspects of the business activities such as inventory management, market intermediation, costs for

“jobs,” and productivity. These cast insights into how accounting can be improved and reformed to incorporate such issues as the “productivity paradox” (the measurement of IT productivity). Base on real world examples such as Dell and Federal Express, this book identifies five influential factors – globalization, speed, service-orientation, worker dispersion, and virtual organization, which are worth managerial attention.

The basis for value in the age of knowledge economy is thus fundamentally different. With the four types of “scaling” in effect, we need a change in focus for the problem of valuing businesses. This has long been an important topic for researchers, investors and managers.

Implications for Research

Valuing Technology presents a state-of-the-art discussion on valuing IT and knowledge capital, a major topic in the academic world. Researchers could find the four types of “scaling” a good framework for research on the valuation of knowledge business. Furthermore, a number of interesting ideas can also be extracted from each of these four “building blocks.” For example, the acceleration of converging technology may serve as a potential research project. More efforts, both theoretical and empirical, are necessary for detailing out and justifying the new valuation techniques proposed by the author.

The book also gives a very good review of traditional valuation approaches like discounted cash flow. Traditionally we base valuation from ownership of assets. Unfortunately, this is becoming less and less relevant. Nowadays businesses generate values from processes. A better knowledge in critical business processes is the key to success and hence the main source of values. The author discusses some promising directions to go for business valuation.

How can we value an IT project? What are the best value metrics for businesses competing with processes and knowledge? What guides us in making business decisions about whether to acquire technology/knowledge or to develop it in

house? These are just a few questions that come to the minds of managers in the age of knowledge economy from time to time. This book sheds lights and provides useful insights on them.

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