Chapter 1
Foundations and Future Prospects of Standards Studies: Multidisciplinary Approach

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ABSTRACT

The standards world has radically changed over the past two decades, especially in international standardization, with an increased impact on business and society, although the essential characteristic of standardization in general; namely, to achieve the optimal order in a given context, remains unchanged. In this article, such evolution of international standardization, caused by its structural adaptation to changes in its environment as well as the origin and history of standardization and standards, are reviewed initially. Subsequently, “standard studies” is advocated as a new academic discipline to comprehensively analyze the problems of standardization and standards from a broader perspective, transcending predominantly technological concerns. Finally, the need to invest in standards research and education is highlighted.

EVOLUTION OF INTERNATIONAL STANDARDIZATION

The First Wave Driven by Technology

To date, standards have not been taken up for an academic discipline. Since the development of standards as industrial infrastructure requires the accumulation of considerable data and expert knowledge, it has been entrusted to professional engineers in a business corporation. This is proved by the historical evolution of international standardization. In 1865, an organization concerned with the technology of sending a signal, invented by Samuel F.B. Morse, was launched, a body that has now been succeeded by the International Telecommunication Union (ITU). One of the important tasks today is the allocation of frequencies for mobile phones and the preparation of international agreements published as recom-
recommendations. The next international organization was established in 1906 by Lord Kelvin as the International Electrotechnical Commission (IEC) to deal with the electrical technology invented at the time. The third one was set up in 1926, with the focus on mechanical technology, which is the predecessor of the present International Standardization Organization (ISO). Finally in 1987, the Joint Technical Committee 1 (JTC1) was created, together with the IEC and the ISO, in the field of information technology especially related to computer software. The start of these four organizations, each of which corresponds to the then emerging key technologies; namely, communication, electrical, mechanical and information technologies, seems to characterize the technology-led first wave in the history of standards development. As a general rule, the diffusion of a key technology embodied in new products and services calls for such specifications to make them fit for use and acceptable to the times and society. In this sense, the first wave is derived from the adaptation of technological innovation to market or social needs.

The Second Wave Driven by Corporation

The world of standards, however, has been transfigured by a new situation that occurred two decades ago.

In the first place, the rapid progress of the digital revolution brought the importance of consortium or de facto standards to complement de jure standards, the latter of which takes an average of five years to make. This pace is not suitable for shorter-lifecycle products in the infocommunications domain, where many competitors strategically strive to gain a predominant market position. The standards for compact discs, digital audiotapes, or digital video discs were completed in consortium and subsequently absorbed into the IEC. If such procedures become common practice, however, international organizations publicly recognized as authorities to create standards turn out to be stamping agencies of de jure standards and not involved in the substantial discussion of its contents.

There are significant differences in the standardization methods and procedures used across standards organizations such as the ISO/IEC and the World Wide Web Consortium (W3C) to develop interoperable technologies for leading the Web to its full potential. Some procedures emphasize the need to reach a broad consensus, while others emphasize speed. It is vital to know which procedures are best suited to developing a global standard for a particular product. Digital industries, for example, usually demand faster standardization than the transport sector. Awareness of differences in standardization can be critical for the future of a company or industry.

Second, the managerial angle was introduced as a new perspective for standards. In Europe, harmonization of national standards and regulations was accelerated in the 1980s for the consolidation of markets; and the Quality Management System Standard, which originated in the UK, was adopted as the ISO 9000 series of standards for quality management in 1987. This is concerned with the system and the process of decision-making in organizations that try to respond voluntarily to customer requirements with respect to quality as well as conformity to legal requirements. Such a management system standard has completely changed the old image or fixed idea of the technology standard to specify the product characteristics and testing method. This new type of standard has become the tool of corporate governance linking business and society. A similar ISO 14000 series of management system standard was introduced into the environment in 1996 at the strong urging of the Business Council for Sustainable Development, food safety in 2005, and information security in 2006, respectively, with the social responsibility standard expected to be published in 2008. The ISO has responded on a timely basis to new types of requirements, which has diversified its
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