Chapter 1

Background of Standards Strategy

EXECUTIVE SUMMARY

First, the literature of research on standards is reviewed, and an overview of the definitions and classifications of standards is provided. Then particular aspects of the ICT (Information and Communications Technology) industry as related to standardization are reviewed. Finally, standards strategies in the ICT industry are examined by critically reviewing the existing literature and identifying important areas that need further investigation.

1. DEFINITION OF STANDARD

In this section, various received definitions and categories of standards will be presented, in order to arrive at a definition of standard, which will be suitable for the purpose of this study.

The term “standard” is commonly used in daily life with various meanings. While it can be used to refer to various concrete things—including the banners of the Roman legion, a structure built for or serving as a support, and tree with an erect stem—it is most commonly used to designate “a means of determining what a thing should be,” or more specifically:

- Something established by authority, custom, or general consent as a model or example.
- Something set up and established by authority as a rule for the measure of quantity, weight, extent, value, or quality (Merriam-Webster’s Dictionary, p. 1148).

Research on standards first appeared in the 1980s, in the examination of the roles and types of standards used in the information sector (David and Greenstein, 1990). David and Greenstein (1990) gave a survey of this research. Of the studies they examined, few actually provided a concrete definition for the term “standard.” In their stead, David and Greenstein proposed a general definition for
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technical standard: “a set of technical specifications adhered to by a producer, either tacitly or as a result of a formal agreement” (p. 4).

This definition has been cited by many researchers since then (e.g. Chiesa and Toletti, 2003). Another commonly used definition is the one proposed by Tassey (2000). He suggests that “a standard can be defined generally as a construct that results from reasoned, collective choice and enables agreement on solutions of recurrent problems” (p. 588), and he further specifies industry standards as “a set of specifications to which all elements of products, processes, formats or procedures under its jurisdiction must conform” (p. 588) (e.g. van Wegberg, 2004).

Different types of standards may be categorized by their characteristics (David and Greenstein, 1990; Grindley, 1995; Tassey, 2000). The literature on standards offers different ways to classify them according to their purpose or the role they play (David and Greenstein, 1990; Tassey, 2000). David and Greenstein (1990) distinguish between standards as model reference, as minimal level of quality, and as criteria of compatibility (interface) between components. Reference standards and minimal quality standards represent specifications that a product as a whole should conform to, while compatibility (interface) standards focus on specifications for the relationships between components in order for them to function as one system.

Grindley (1995) discerns a similar split and classifies standards into two types: those that control the quality of a product as a whole entity, and those required for compatibility of products as parts in larger systems. Quality standards, focusing on the features of the product itself, are subdivided into two types: minimum attributes related to the measurement, gradation, and public regulation of product performance as whole entities; and product characteristics as related to style, tastes and production economies. Compatibility standards, concerning the relationship among whole products or services, address three areas: complementary products, complementary services, and direct networks. Complementary products refer to items that perform complementary functions, for example, electronic component systems for automobiles, and software applications for computers. They are frequently supplied by separate producers or even separate industries. Complementary services usually refer to supporting services; for example, maintenance service for automobiles or computers, management service for computer facilities, and training service for users. Direct networks refer to the ways and means for connecting users to the same core product or service; for example, railway routes and telecommunications links.

Tassey (2000) offers a more detailed taxonomy along the same vein, classifying standards based on the functions for which they are generally used. First, there are standards that play a role in specifying quality and reliability, and in measuring product or service performance. For example, when firms purchase parts for their products, they require a specific range of characteristics such as elasticity and durability of parts. Second, there are standards that inform the specification and evaluation of technical and engineering designs, for example the standardized measurements used in semiconductor fabrication facilities. Third, there are standards for ensuring the compatibility of the function and performance of complementary systems, and standards for providing technology specifications to ensure the interoperability of component systems. Fourth, there are standards whose adoption serves to reduce variations in the characteristics of a product, for example in size and quality, in order to reach economies of scale.

Among the many types of standards, those used for the purpose of compatibility and interoperability have received the most attention from practitioners and researchers in the field of information and communications technology (David and Greenstein, 1990; Grindley, 1995; Tassey, 2000; van Wegberg, 2004). It is a characteristic of the ICT industry that products and services always involve many complementary subsystems, components, and complementary services (David and