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ICT Standardisation Observatory and Support Facility in Europe

The role of ICT Standards

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Module Objectives

After completing this module, you should be able to:

1. To know the various **functions of ICT standards**
2. To understand **Compatibility/ Interface Standards, Minimum Quality/ Safety Standards, Variety Reduction Standards, and Information/ Measurement Standards**
3. To be able to **apply the different types of standards to ICT specific topics**.

About The Author

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Knut Blind studied economics, political science, and psychology at Freiburg University. During his studies, he spent one year at Brock University (Canada), where he was awarded a BA. Finally, he earned his Diploma in Economics and later his doctoral degree at Freiburg University. Between 1996 and 2010, he joined the Fraunhofer Institute for Systems and Innovation Research, Karlsruhe, Germany, as a senior researcher and, at last, as head of the Competence Center “Regulation and Innovation”. In April 2006, Knut Blind was appointed Professor of Innovation Economics at the Faculty of Economics and Management at the Berlin University of Technology. Between 2008 and 2016, he also held the endowed chair of standardization at the Rotterdam School of Management of Erasmus University. From April 2010 to September 2019, he was linked to the Fraunhofer Institute of Open Communication Systems in Berlin. Since October 2019, he has been head of the business unit “Innovation and Regulation” at the Fraunhofer Institute for Systems and Innovation Research. In 2012, he initiated both the Berlin Innovation Panel and the German Standardization Panel followed by a pilot of a European Standardization Panel launched in 2023. Besides numerous articles on patents, he published several contributions on standardization and further innovation aspects in refereed journals.

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1 Introduction

The webinar covers the introduction to the basics of standards and their effects particularly on information and communication technology (ICT).

The learning objectives include understanding the various functions of standards, recognizing different types of standards (Compatibility/Interface, Minimum Quality/Safety, Variety Reduction, Information/Measurement), and applying these standards to specific ICT topics.

The introduction emphasizes the pervasive role of standards in both everyday life and professional settings. It highlights the long-standing recognition of standardized measurements in society, such as those for weight, distance, or length. The document underscores the need for new and updated standards due to rapid technological progress, with a particular emphasis on the dynamic nature of Information and Communications Technologies (ICT). The role of standardization is portrayed as crucial in facilitating progress and providing a foundation for the evolution of technology and science.

2 Basics of Standards

The section on the basics of standards provides a comprehensive overview of what standards are and why they are essential. It defines a "standard" as a widely agreed way of doing something, applicable to various areas like designing a product, building a process, implementing a procedure, or delivering a service. Emphasizing the critical role of standards, it suggests that our technological world would be challenging to operate without them.

The document distinguishes between two main types of standards: de facto standards, widely adopted by an industry and its customers, and standards developed by Standards Development Organizations (SDOs) through formal procedures. It notes that de facto standards can become formal standards if approved by an SDO, citing examples like HTML and PDF.

Furthermore, the document illustrates the importance of standards in everyday life, providing examples such as the use of smartphones, personal computers, and even the simple act of switching on lights. It highlights the multitude of standards involved in these activities, showcasing the pervasiveness of standards in modern technology and daily routines.

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3 Effects of Standards

The section 3 delves into the effects of standards, both positive and negative, differentiated by types of standards with a specific focus on compatibility or interface standards:

	Positive Effects	Negative Effects
Compatibility/ Interface Standards	• Network externalities • Avoiding lock-in in old technologies • Increased variety of system products • Efficiency in supply chains	• Anti-competition, leading to monopoly • Lock-in in old technologies in case of strong network externalities
Minimum Quality/ Safety Standards	• Avoiding adverse selection • Creating trust • Reducing transaction costs	• Regulatory capture • Increasing entry barriers
Variety Reduction Standards	• Economies of scale • Building focus and critical mass	• Reduced choice • Leading to monopoly, market access barriers
Information/ measurement Standard	• Facilitating trade • Reduced transaction costs • Providing codified knowledge	• Regulatory Capture

Source: Swann (2000), Pham (2006), Blind (2022), modified

In summary, Compatibility/Interface Standards play a pivotal role in ensuring interoperability and coexistence in the ICT sector. While they bring positive effects like network externalities and increased variety, potential negatives such as anti-competition and lock-in are also acknowledged. The significance of open standards in reducing transaction costs and fostering competition is emphasized, supported by real-world examples from industry leaders like Microsoft and Apple.

Minimum Quality/Safety Standards play a crucial role in ensuring the reliability and safety of products and services. They contribute to welfare improvement, risk reduction, and trust building. However, challenges related to product variety, information asymmetries, and potential barriers to entry should be carefully considered. The impact on new market entrants emphasizes the importance of open standards in creating a level playing field.
The section discusses the Effects of Variety Reduction Standards, highlighting their key functions and advantages:

Overall, Variety Reduction Standards serve to support scale economies and reduce transaction costs, offering advantages such as preventing market fragmentation and lowering risk for suppliers. The competitive dynamics involve considerations of variety proliferation by incumbents and potential barriers to entry. The need for public definition of standards depends on the specific context and the performance implications of idiosyncratic models.

Information and measurement standards play a crucial role in technology transfer, serving as repositories of codified knowledge and product descriptions.

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4 Summary

The webinar “Role of Standards in ICT” provides a comprehensive overview of the different functions of standards for ICT particularly their importance in ensuring the interoperability, compatibility, and reliability of ICT systems. It also discusses the benefits and challenges associated with standards and emphasizes the need for collaboration between stakeholders to ensure that standards are developed and maintained in a way that benefits all parties involved.

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