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TRAINING ACADEMY

Beginner 1

Course 7

STANDARDISATION TRAINING ACADEMY

Topic:

EFFECTS OF STANDARDS IMPLEMENTATION

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Module Objectives

After completing this module, you should be able to:

1. understand that standardisation must be evaluated from an economic point of view;
2. explain the network effects and the fact that the more users use only one standard, the higher the probability that other users will choose the same standard, as well;
3. explain that direct network effects arise when users are being linked to a large number of different agents (e.g. telephone/e-mail networks);
4. explain that indirect network effects arise when users must join two or more components that are linked to different networks to achieve the network benefits;
5. explain that if several manufacturers offer the same or similar products at the market, it does not necessarily mean that the one with more advanced solutions will win but the one more successful in developing a larger network of users and even the one that may eventually lead the establishment of a common sectoral standard;
6. explain the way in which the situation explained by the information asymmetry and Gresham's Law might be solved by the minimum quality/safety standards; and
7. explain the way in which the information/measurement standards may significantly reduce transactional costs between buyers and sellers;

Key Terms

compatibility standards, Gresham's Law, information asymmetry, information/measurement standards, minimum quality/safety standards, switching costs, variety-reducing standards

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1 THE EFFECTS OF STANDARDS IMPLEMENTATION

The global economy, integration, and internationalisation of local markets have made standardisation's strategic and economic potential to become tremendously significant. Many aspects of standardisation no longer take place at the national level but are becoming mostly regional and international. Due to technological supremacy, the standardisation arena is becoming the dominant area of most developed countries, global consortia, and companies. As shown by several examples of some Asian countries, standardisation can also contribute significantly to developing countries catching up with developed countries.

Today, it is practically impossible to imagine any area of human activities where standardisation does not exist. The phenomenon that standardisation is no longer considered only as an engineering discipline has led to the widening of the meaning of the term "technical", and a variety of authors use the term "technical" in the sense of essential for a specific field or which essentially determines something or some way of working in a particular area. Although standardisation deals with technical issues, it has predominantly economic goals. It may even be said that the technical dimension of standardisation is of secondary importance; economic benefits are the driving force of any standardisation-related activity. Standardisation must always be evaluated from an economic point of view. The company may use standardisation as a strategic instrument in the global market(s). For this to be possible, the company must learn about the benefits/costs of standardisation.

It is challenging to generalise the effects and benefits of implementing every standard. The benefits of applying one standard depend on the specificity and the essence of the standard itself. That is why it is necessary to classify standards according to the benefits or the types of economic problems they resolve. David (1987) explained one of the most quoted classifications of standards related to the types of economic problems they resolve. [1]

According to the types of economic problems they resolve, standards can be classified as: [2]

- **compatibility standards** enable the fitting of interrelated entities to one another so they may function together [3]; some of the first examples of standards from this group have been developed to be used by the railway as its success was mainly based on the establishment of networks; several IT standards belong to this group;
- **minimum quality/safety standards,** considering that with the development of markets and technologies, information asymmetry emerged as the phenomenon that producers have much

[1] David, P. (1987). Some new standards for the economics of standardisation in the information age. In M. Waterson, P. Dasgupta, & P. Stoneman (Eds.), Economic Policy and Technological Performance. (Vol. 98, Issue 392), https://doi.org/10.2307/2233926, pp. 857.

[2] Ibid.

[3] De Vries, H. J. (1999). Standardisation: A Business Approach to the Role of National Standardisation Organizations. Springer New York, NY Springer-Verlag US 1999, 1st Edition, https://doi.org/10.1007/978-1-4757-3042-5, pp. 33.

more information about the product than customers [4]; customers can sometimes face a wide variety of different products on the market and have difficulties distinguishing high-quality from low-quality before buying. As shown by Akerlof, this may lead to a situation in which low-quality sellers will eventually drive high-quality sellers out of the market [5]; this problem can be solved by using minimum quality/safety standards that define the minimum requirements;

- **variety-reducing standards** ''limit the production of a certain product to a certain range of characteristics, such as size, quality, and some technical specifications'' [6], enabling mass production, consequently cutting costs of products, enabling more efficient inventory management, and having specific contributions; an example of these standards are standards giving requirements for screws and transport pallets;
- **information/measurement standards** are a hybrid of the above three categories [7]; an example of these standards are standards that define the marking and grading of tyres/marking and grading of petrol (e.g. four-star, unleaded & super-unleaded). [8]

David explained the benefits and costs that direct and indirect users of standards and society as a whole may have from using standards, but it is important to point out that he was originally talking about technical (product) standards. [9] Additionally, several authors (Blind, Hesser, De Vries, Pham, etc.) generalised this classification of standards, so today, throughout the standardisation theory, the effects first defined by David are observed more broadly compared to the original explanations. [10]

1.1 ECONOMIC EFFECTS OF COMPATIBILITY STANDARDS

The key economic effects associated with this group of standards can be positive and negative. All the positive and negative effects of compatibility standards can be classified as:

- the network externalities;
- the phenomenon of lock-in;
- the switching costs;
- the increased variety of systems/products; and
- the portability and connectivity.

[4] Akerlof, G. A. (1970). The Market for "Lemons": Quality Uncertainty and the Market Mechanism. The Quarterly Journal of Economics. https://doi.org/10.2307/1879431.
[5] Ibid.
[6] Pham, T. H. (2006). Economic Aspects of Standardisation. In W. Hesser, Feilzer, & H. De Vries (Eds.), Standardisation in Companies and Markets. Helmut Schmidt University, Hamburg, pp. 77-123.
[7] Ibid.
[8] Ibid.
[9] David, P. (1987). Some new standards for the economics of standardisation in the information age. In M. Waterson, P. Dasgupta, & P. Stoneman (Eds.), Economic Policy and Technological Performance. (Vol. 98, Issue 392), https://doi.org/10.2307/2233926, pp. 857.
[10] Pham, T. H. (2006). Economic Aspects of Standardisation. In W. Hesser, Feilzer, & H. De Vries (Eds.), Standardisation in Companies and Markets. Helmut Schmidt University, Hamburg, pp. 77-123.

1.1.1 NETWORK EXTERNALITIES

Network externalities are usually defined as ''a change in the benefit, or surplus, that an agent derives from a good when the number of other agents consuming the same kind of good changes''. [11] The same authors suggested that the term network effects shall not be used interchangeably with the network externalities unless the market agents fail to internalise these effects. [12] Although consumers may fail to internalise these effects, the network owner may succeed at internalising them so they cannot be called externalities. [13] Although this distinction may be adopted by some authors, it is still not generally accepted. [14]

The direct effects may arise when users are being linked (physically or psychologically) to a large number of different agents. [15] For example, when it comes to telephone or e-mail networks, users benefit from being linked to a large group of people to communicate with. [16] This seems to suggest that if there is no large group of people to communicate with, the utility of such a network for the current users seems to be limited. [17] Companies accept the standard to have greater network effects, expand the market, and gain greater competition. The more users use one standard, the higher the probability that other users will choose the same standard, as well. [18] Compared to the direct effects, the indirect effects arise when users must join two or more components linked to different networks to achieve network benefits. [19] For example, if a consumer buys one product today, it may not lead to direct effects but may affect the variety and prices of compatible products in the future. [20] This seems to suggest that indirect network effects arise only under the dynamic framework (e.g. when consumers decide to buy something or choose to enter a market continuously). [21]

The fact is that the market offers a large selection of games from manufacturers that have sold more gaming consoles. This phenomenon might be explained by the indirect effects. The direct network effects might be seen through networking and playing online games with compatible gaming consoles (which are based on the same compatibility standard). These indirect effects arise only through future demand and market dynamics: a consumer who buys a gaming console expects to be able to buy current games at least for some time. As the network of users grows, so will the direct and indirect effects. A larger network will attract more new users and this will eventually lead to the development of indirect effects. The use of compatibility standards enables the establishment and expansion of networks, which affects the

[11] Liebowitz, S. J., & Margolis, S. E. (2014). Network Externalities (Effects). Accessed on 25.02.2025. Retrieved from: https://personal.utdallas.edu/~liebowit/.
[12] Ibid.
[13] Ibid.
[14] Ibid.
[15] Pham, T. H. (2006). Economic Aspects of Standardisation. In W. Hesser, Feilzer, & H. De Vries (Eds.), Standardisation in Companies and Markets. Helmut Schmidt University, Hamburg, pp. 77-123.
[16] Ibid.
[17] Ibid.
[18] Ibid.
[19] Ibid.
[20] Ibid.
[21] Blind, K. (2004). The Economics of Standards: Theory, Evidence, Policy, Edward Elgar Publishing, pp. 17.

development of direct and indirect network effects, establishes the basis for market expansion, and encourages users to use products from different manufacturers.

1.1.2 LOCK-IN

Accordingly, if several manufacturers offer the same or similar products at the market, it does not necessarily mean that the one with more advanced technological solutions will win but the one more successful in developing a larger network of users and customers and even the one that may eventually lead the establishment of a common sectoral standard. [22]

If the standard that solves the problem of compatibility is proprietary (e.g. informal) and dominant, the company that owns the standard may establish a monopoly in the market. [23] Abuse of the established monopoly may arise by dominating the market and contractual obligations when the use of such a standard limits the development of new solutions and new standards in the market. As explained by Blind, there is the risk of getting locked in the inferior design as users are unwilling to switch to something better. [24] Switching may cause costs and it becomes more expensive if one cannot be sure if everyone else will switch too. [25]

In the case of physical networks (e.g. railroads, electricity transmission, or gas pipelines), compatibility standards enable the development of the market for components, materials, and spare parts by enabling more manufacturers to produce components with appropriate characteristics and even innovation at the component level. [26] Consumers may choose components that optimise their system design. [27] Compatibility standards may substitute components supplied by more than one manufacturer thereby preventing the phenomenon of lock-in. [28]

1.1.3 SWITCHING COSTS

Speaking about network effects, we generally assume that consumers may switch between various standards available in the market. [29] Before committing to a certain standard, customers may explore

[22] Pham, T. H. (2006). Economic Aspects of Standardisation. In W. Hesser, Feilzer, & H. De Vries (Eds.), Standardisation in Companies and Markets. Helmut Schmidt University, Hamburg, pp. 77-123.
[23] Blind, K. (2004). The Economics of Standards: Theory, Evidence, Policy, Edward Elgar Publishing, pp. 17.
[24] Ibid., pp. 15.
[25] Ibid., pp. 17.
[26] Ibid., pp. 17.
[27] Ibid., pp. 17.
[28] Ibid., pp. 17.
[29] Pham, T. H. (2006). Economic Aspects of Standardisation. In W. Hesser, Feilzer, & H. De Vries (Eds.), Standardisation in Companies and Markets. Helmut Schmidt University, Hamburg, pp. 77-123.

different solutions, but once committed, choosing a different standard may be quite expensive. [30] These costs are called switching costs and are defined as costs that a consumer pays ''as a result of switching brands, suppliers, or products''. [31] Although these costs are monetary, there are psychological, effort-based, and time-based switching costs. [32]

Switching costs can also be classified as learning costs, transactional costs, and artificial costs. [33] For example, switching to a new brand of hardware or software after learning how to use an existing brand cause learning costs. [34] Although a new brand may be more stable/efficient than the old one, learning how to use it or even teaching employees how to do it may cause additional costs. [35] These costs may be very high even though brands might be quite similar. [36] Similarly, switching to another bank or long-distance telephone service might cause transactional costs, and switching to another brand before using frequent flyer miles or loyalty customers cards might cause artificial costs. [37] Once customers reach a certain limit they are rewarded with special frequent flyer miles or loyalty customers cards to be used within the same service provider so if they choose to switch to another service provider they have to pay. [38] These artificial costs may be explained as quite reasonable, due to customers switching to the untested brand from the one they have tried and liked. [39]

The existence of switching costs may eventually lead to excess inertia meaning that users ''delay adopting new technology or choosing from several technologies''. [40] The existence of switching costs also leads to excess momentum meaning that users use an inferior technology fearing it may become stranded. [41] The excess momentum may also arise from one large firm being dominant in the market and affecting standards development so small firms might not be willing to adopt new technologies due to the risk of being displaced by the dominant firm. [42] The economic effects of these costs may be explained by the fact that the existence of these costs may lead to establishing a monopoly, especially considering that switching costs are much higher than the expected benefits from the network effects. [43]

[30] Ibid.
[31] Grant, M. (2024). Switching Costs: Definition, Types, and Common Examples. Accessed on 20.02.2025. Retrieved from: https://www.investopedia.com/terms/s/switchingcosts.asp.
[32] Ibid.
[33] Klemperer, P. (1987). The Competitiveness of Markets With Switching Costs. The RAND Journal of Economics, 18(1), pp. 138–150, https://doi.org/10.2307/2555540.
[34] Ibid.
[35] Pham, T. H. (2006). Economic Aspects of Standardisation. In W. Hesser, Feilzer, & H. De Vries (Eds.), Standardisation in Companies and Markets. Helmut Schmidt University, Hamburg, pp. 77-123.
[36] Klemperer, P. (1987). The Competitiveness of Markets With Switching Costs. The RAND Journal of Economics, 18(1), pp. 138–150, https://doi.org/10.2307/2555540.
[37] Ibid.
[38] Ibid.
[39] Ibid.
[40] Pham, T. H. (2006). Economic Aspects of Standardisation. In W. Hesser, Feilzer, & H. De Vries (Eds.), Standardisation in Companies and Markets. Helmut Schmidt University, Hamburg, pp. 77-123.
[41] Ibid.
[42] Ibid.
[43] Ibid.

1.1.4 INCREASED VARIETY OF SYSTEMS/PRODUCTS

Compatibility standards enable the establishment and development of the market for complementary products. Complementary products are products that are essentially different, but the demand for one product encourages the demand for the other product. For example, the standard for computer connectors allowed the development of a market for additional products for computers. Compatibility makes complementary products available and lowers the cost of the product. In addition to the availability of complementary products on the market, the effects of applying compatibility standards are that different manufacturers produce complementary products that can be used on all basic products. For example, a headset made by one manufacturer will work on another manufacturer's phone, and all computers can connect to printers of the same generation.

1.1.5 PORTABILITY & CONNECTIVITY

Compatibility standards enable connecting different basic and complementary products and their portability. For example, by adopting the DVD standard and adding a DVD player to the gaming consoles, SONY achieved the effect of functional portability for its users. Today, the basic product (gaming console) also has the additional function of a DVD player. The portability increases product value to users, minimises/eliminates replacement costs, and protects the user's investment. Additionally, the use of compatibility standards also allows different products to be connected by networks. Nowadays, we can connect our computers to mobile phones or TVs, so the benefits of using basic products are increasing.

1.2 ECONOMIC EFFECTS OF MINIMUM QUALITY/SAFETY STANDARDS

With the development of markets and technologies, information asymmetry emerged as the phenomenon that producers have more information about the product than customers. [44] As a result, customers face a wide variety of different products in the market and have difficulties distinguishing high-quality products from low-quality products before buying. [45] This may lead to a situation in which low-quality sellers will drive high-quality sellers out of the market. [46] This may be solved by minimum quality/safety standards that define minimum quality/safety requirements of products, services, processes, and management systems.

This phenomenon may also be explained by the so-called Gresham's Law which postulates that bad drives out good. More specifically: ''if coins containing metal of different value have the same value as legal

[44] Akerlof, G. A. (1970). The Market for "Lemons": Quality Uncertainty and the Market Mechanism. The Quarterly Journal of Economics. https://doi.org/10.2307/1879431.
[45] Ibid.
[46] Ibid.

tender, the coins composed of the cheaper metal will be used for payment, while those made of more expensive metal will be hoarded or exported and thus tend to disappear from circulation. For example, during the period from 1792 to 1834, the US maintained an exchange ratio between silver and gold of 15:1, while ratios in Europe ranged from 15.5:1 to 16.06:1. This made it profitable for owners of gold to sell their gold in the European market and take their silver to the US mint. The effect was that gold was withdrawn from domestic circulation; the ''inferior'' money had driven it out''. [47]

The situation explained by Gresham's Law might be solved by the minimum quality/safety standards. If these minimum quality/safety standards exist, buyers will have enough information to distinguish high-quality products from low-quality products before buying. [48] If these standards are publicly available they may be more effective as they may be used by suppliers and buyers without additional costs. [49] And even if they are not publicly available they still may benefit a significant number of actors who developed a standard. [50] Additionally, these standards may assist in reducing transactional costs and search costs, consequently leading to customers not needing substantial time and/or money to spend before buying. [51] This is especially relevant for large-volume buyers and sellers who must be able to buy and sell large volumes without seeing these products and that is only possible with absolute confidence about the characteristics of the products being bought. [52]

The concept of raising rivals' costs may be explained as a situation in which producers may lobby the regulatory bodies to look out for their interests, consequently raising the costs of their competitors. [53] Accordingly, high-cost and high-quality producers are more likely to lobby the regulatory bodies so that high-quality products may eventually become a minimum-quality standard that will serve as a market-access barrier to their competitors. [54]

1.3 ECONOMIC EFFECTS OF VARIETY-REDUCING STANDARDS

The vast majority of standards belong to this group of standards, which aims at reducing excessive product variety considering size, quality, and other technical characteristics. Some examples of these types of standards are standards for bolts, pallets, and containers.

[47] Britannica. (2025). Gresham's law. Accessed on 20.02.2025. Retrieved from: https://www.britannica.com/topic/Greshams-law.
[48] Blind, K. (2004). The Economics of Standards: Theory, Evidence, Policy, Edward Elgar Publishing, pp. 19.
[49] Ibid.
[50] Ibid.
[51] Ibid.
[52] Ibid.
[53] Pham, T. H. (2006). Economic Aspects of Standardisation. In W. Hesser, Feilzer, & H. De Vries (Eds.), Standardisation in Companies and Markets. Helmut Schmidt University, Hamburg, pp. 77-123.
[54] Ibid.

The variety-reducing standards have both positive and negative economic effects. [55] First, by minimising the significant amount of resources invested in developing minimally differentiated aspects and technologies, these standards encourage the economy of scale. [56] By focusing on only one standardised model, these standards enable the mass sourcing of components and materials, mass production, and even mass distribution which consequently leads to lower costs per product unit. [57] This may be seen as the best-known variety-reduction function of standards. [58] Second, these standards may also assist firms to minimise risks related to choosing among a wide variety of technological alternatives. [59] These standards play a vital role in ''achieving focus and cohesion among pioneering companies'' as they may sometimes get locked in small segments and dispersed standards. [60] These standards are crucial to achieving such a focus and developing standards markets. [61]

Although these standards may cause substantial benefits for suppliers, they may also cause substantial costs for users/buyers due to a limited number of alternatives to choose from. [62] These standards may also cause substantial adoption costs and even a utility loss for users due to a larger distance between the most preferred and supplied specification. [63] Although these standards are considered to enable economies of scale, they also encourage advanced capital-intensive process technologies. [64] Although these trends may or may not reduce overall competition, they may eventually lead to some small innovative enterprises being excluded from the market. [65]

1.4 ECONOMIC EFFECTS OF INFORMATION/MEASUREMENT STANDARDS

These standards are a hybrid of the above three categories. [66] For example, motorists must be sure that standards that describe the marking and the grading of petrol (e.g. four-star, unleaded and super-unleaded) are compatible. [67] As a result, petrol suppliers may achieve economies of scale, not only through mass production but also through mass distribution. [68]

[55] Ibid.
[56] Ibid.
[57] Blind, K. (2004). The Economics of Standards: Theory, Evidence, Policy, Edward Elgar Publishing, pp. 20.
[58] Pham, T. H. (2006). Economic Aspects of Standardisation. In W. Hesser, Feilzer, & H. De Vries (Eds.), Standardisation in Companies and Markets. Helmut Schmidt University, Hamburg, pp. 77-123.
[59] Ibid.
[60] Blind, K. (2004). The Economics of Standards: Theory, Evidence, Policy, Edward Elgar Publishing, pp. 20.
[61] Pham, T. H. (2006). Economic Aspects of Standardisation. In W. Hesser, Feilzer, & H. De Vries (Eds.), Standardisation in Companies and Markets. Helmut Schmidt University, Hamburg, pp. 77-123.
[62] Ibid.
[63] Blind, K. (2004). The Economics of Standards: Theory, Evidence, Policy, Edward Elgar Publishing, pp. 20.
[64] Ibid.
[65] Ibid.
[66] Pham, T. H. (2006). Economic Aspects of Standardisation. In W. Hesser, Feilzer, & H. De Vries (Eds.), Standardisation in Companies and Markets. Helmut Schmidt University, Hamburg, pp. 77-123.
[67] Ibid.
[68] Blind, K. (2004). The Economics of Standards: Theory, Evidence, Policy, Edward Elgar Publishing, pp. 21.

Similarly, measurement standards serve as a guarantee that products are exactly what they are meant to be. [69] These standards aim at overcoming information asymmetry, transactional costs, and search costs which are crucial for a successful market economy. [70] These standards offer a basis for establishing terminological and bibliographical databases, test methods, guides, and various documents. [71] By avoiding disagreements that may occur due to dispute settlements, these documents may significantly reduce transactional costs between buyers and sellers. [72] These standards are a ground basis for technological change. [73]

1.5 CONCLUSIONS

Table 1. summarises all of the aforementioned effects:

Table 1. General effects of standards (modified from different authors) [74, 75]

	Positive effects	Negative effects
Compatibility Standards	- network externalities; - avoiding lock-in; - increasing systems/products variety;	- monopoly; - anticompetition;
Minimum Quality/ Safety Standards	- solving adverse selection; - reducing transaction costs; - reducing search costs; - solving negative externalities;	- raising rivals' costs; - regulatory capture;
Variety-Reducing Standards	- economies of scale; - building focus and critical mass;	- monopoly; - reducing choice; - market concentration;

[69] Pham, T. H. (2006). Economic Aspects of Standardisation. In W. Hesser, Feilzer, & H. De Vries (Eds.), Standardisation in Companies and Markets. Helmut Schmidt University, Hamburg, pp. 77-123.
[70] Ibid.
[71] Tassey, G. (2000). Standardisation in technology-based markets. Research Policy, 29(4–5), pp. 587–602, https://doi.org/10.1016/S0048-7333(99)00091-8.
[72] Ibid.
[73] Pham, T. H. (2006). Economic Aspects of Standardisation. In W. Hesser, Feilzer, & H. De Vries (Eds.), Standardisation in Companies and Markets. Helmut Schmidt University, Hamburg, pp. 77-123.
[74] Blind, K. (2004). The Economics of Standards: Theory, Evidence, Policy, Edward Elgar Publishing, pp. 20.
[75] Pham, T. H. (2006). Economic Aspects of Standardisation. In W. Hesser, Feilzer, & H. De Vries (Eds.), Standardisation in Companies and Markets. Helmut Schmidt University, Hamburg, pp. 77-123.

		- market-access barriers;
Information/ Measurement Standards	- reducing transaction costs; - facilitates trade; - facilitating new technologies;	- regulatory capture;

SUMMARY

Today, it is practically impossible to imagine any area of human activities in which standardisation does not exist. The phenomenon that standardisation is no longer considered only as an engineering discipline has led to the widening of the meaning of the term "technical" and a variety of authors use the term "technical" in the sense of essential for a certain field or which essentially determines something or some way of working in a specific area. Although standardisation deals with technical issues, it has predominantly economic goals. It may even be said that the technical dimension of standardisation is of secondary importance, economic benefits are the driving force of any standardisation-related activity. Standardisation must always be evaluated from an economic point of view. The company may use standardisation as a strategic instrument in the global market(s). For this to be possible, the company must learn about the benefits/costs of standardisation.

It is very difficult to generalise the effects and benefits of implementing every standard. The benefits of applying one standard depend on the specificity and the essence of the standard itself. That is why it is necessary to classify standards according to the benefits or the types of economic problems they resolve. One of the most quoted classifications of standards related to the types of economic problems they resolve was explained by David. [76]

David explained the benefits and costs that direct and indirect users of standards and society as a whole may have from using standards, but it is important to point out that he was originally talking about technical (product) standards. [77] Additionally, several authors (Blind, Hesser, De Vries, Pham, etc.) carried out some kind of generalisation of this classification of standards, so, today, throughout the standardisation theory, the effects first defined by David are observed more broadly compared to the original explanations. [78]

[76] David, P. (1987). Some new standards for the economics of standardisation in the information age. In M. Waterson, P. Dasgupta, & P. Stoneman (Eds.), Economic Policy and Technological Performance. (Vol. 98, Issue 392), https://doi.org/10.2307/2233926, pp. 857.

[77] Ibid.

[78] Pham, T. H. (2006). Economic Aspects of Standardisation. In W. Hesser, Feilzer, & H. De Vries (Eds.), Standardisation in Companies and Markets. Helmut Schmidt University, Hamburg, pp. 77-123.

GLOSSARY

compatibility standards

enable the fitting of interrelated entities to one another so they may function together [79]

Gresham's Law

The information asymmetry may also be explained by Gresham's Law which postulates that bad drives out good. More specifically: ''if coins containing metal of different value have the same value as legal tender, the coins composed of the cheaper metal will be used for payment, while those made of more expensive metal will be hoarded or exported and thus tend to disappear from circulation. For example, during the period from 1792 to 1834, the US maintained an exchange ratio between silver and gold of 15:1, while ratios in Europe ranged from 15.5:1 to 16.06:1. This made it profitable for owners of gold to sell their gold in the European market and take their silver to the US mint. The effect was that gold was withdrawn from domestic circulation; the ''inferior'' money had driven it out''. [80]

information asymmetry

With the development of markets and technologies, information asymmetry emerged as the phenomenon that producers have more information about the product than customers. [81]

information/measurement standards

a hybrid of compatibility, minimum quality/safety, and the variety-reducing standards [82]

minimum quality/safety standards

set minimum requirements of products, services, processes, and management systems [83]

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switching costs

costs that a consumer pays ''as a result of switching brands, suppliers, or products'' [84]

variety-reducing standards

''limit the production of a certain product to a certain range of characteristics, such as size, quality, and some technical specifications'', enabling mass production, consequently cutting costs of products, enabling more efficient inventory management & specific contributions [85]

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