

## Chapter 2

# Information as Economic Good

### 2.1 Economic Goods

What are goods? According to established definitions, goods are material or immaterial means suited for satisfying human needs (Gabler, 2011; Hopf, 1983, 68 et seq.). In other words, goods serve people. Now, not all goods are also economic goods. Economic actions are only registered when there is an insufficient amount of goods in relation to human requirements. A good such as air, which satisfies the human requirement to breathe, is normally available in sufficient amounts. Such goods, immediately available to everyone, are called **free goods**. At first glance, one might be tempted to describe water as such. However, it soon becomes clear that if one means fresh, drinkable water, it will not be necessary to imagine life in the desert in order to recognize that water is not freely available. In no country are there unlimited amounts of drinking water. Opposed to free goods are thus **scarce goods**.

The scarcity of goods coerces man into acting economically. He must decide how best to use his means of acquiring goods for satisfying his needs. Insofar, it can be assumed that there is a positive willingness to pay for scarce goods, i.e. people are prepared to pay for the value they represent. The acquisition of goods for money is usually conducted on markets. Suppliers and demanders of goods meet there and swap goods for money. The precondition for an exchange of goods coordinated via markets is the goods' marketability. To get back to the example of water: water is—today—a marketable good. Via its connection to the water supply, a household can use measurable quantities of water that will later be brought to account. The case is somewhat different for air—here, marketability has not been a given so far. Only recently have companies started to be required to buy so-called emission certificates if they want to use air as an emission carrier in Europe (Endres et al., 2004). For private individuals, air still remains a free good. In the following, we will focus exclusively on economic goods.

## 2.2 Information Goods

Let us turn to the specific form of the information good. What do we mean by it? A very broad definition is provided by Shapiro and Varian (2003, 49), who define an information good as everything that can be digitized. We can thus include sports results, books, films, music, stock prices or even conversations. As plausible as this definition may appear initially, it still has its flaws, as one might—at first glance—hold physical objects, say a banana or a tennis racquet, to be subject to digitization. According to this definition, they, too, are information goods. Apparently, Shapiro and Varian do not mean the object that can be digitized but the product of the digitization, the digital copy. In the case of physical objects, logically, information goods can only ever be their digitized reproductions. Expressed a little more precisely, the definition is thus:

An information good is everything that is or can be available in digital form, and which is regarded as useful by economic agents.

In order to stress that we are talking about a good, we additionally emphasize the aspect of usefulness assumed by the potential consumer. It is doubly significant: the receiver hopes that he will be cognitively capable of processing the information, and that, furthermore, the information will be useful for satisfying his demands. If, for instance, someone were to buy enterprise data about a Chinese company, only to find out that he cannot process them because they are written in the local language, and also to find out—after a translation has been provided—that he had actually previously received the same data from another source, the assumption of usefulness would be disappointed twice.

A “bad” in this sense would be unwanted TV advertisements, for example. It can be digitized, but it does not serve the receiver, it merely annoys him. Another viewer might see it differently and actively enjoy the ads. What we can glean from this is that information goods have different values for different consumers. From a positive valuation, we can derive a willingness to pay.

The chosen definition for information goods is admittedly extremely pragmatic, but it will do for our purposes. A more detailed information-scientific discussion of the information concept can be found in Stock, 2007, 17 et seq.

The business with information goods is full of preconditions. It is not self-evident at all that the supply and demand of information goods will come together and create information markets. In order to be marketable, information must be not only useful, definable and available to an economic agent, but also transmittable (Bode, 1993, 61). The offer, i.e. the transmission of information goods, is always media-specific. These can be, according to Pross (1972, 127 et seq.), **primary** (carrier) **media**, which facilitate direct interpersonal contact via language, facial expressions or gestures, **secondary media** (e.g. devices such as flags, smoke signals or also letterpress printing), which are necessary for producing information, **tertiary media**, which require technology not only for production but also

transmission and reception (e.g. telephone, CD-ROMs, DVDs) as well as **quaternary media** (Faßler, 2002, 147), such as the internet or video-conferencing systems, which are information-technology-based means of telecommunication.

When information is saved, this occurs via storage media such as central servers, CDs or printed books or magazines. Such data carriers are copies of an information good containing the good's entire content in encoded and decodable form. The same good can—if with different degrees of effort—be reproduced in any number. Usage of a saved information good generally occurs via the decoding of a copy by the user himself (e.g. reading an e-mail) or via the participation of a third party in the decoding of a copy that is not in his possession (e.g. video night) (Pethig, 1997, 2 et seq.).

Information goods thus always have a dual character, since they are always a combination of **content** (e.g. a sports bulletin) and **carrier medium** (Schumann & Hess, 2006, 34). They are then offered as articles in a magazine, radio segments or a sports show on TV. Digitization allows for a simpler separation of content and medium than was possible in the past. Content can now be offered multiple times via different media with no great effort. Electronic information goods always require, next to the carrier medium, an **end device** (e.g. DVD-player, MP3-player) in order to be played. In the following, we will see how important this aspect is, particularly when dealing with network effects. A fourth aspect with regard to information goods is the **law** that applies to them. Ownership of an information good always resides with the original owner or creator, who in selling copies only grants the buyer certain usage or processing rights (Wetzel, 2004, 101). This aspect, in turn, has a great significance for the passing on and usage of information goods, and we will deal with it when discussing bootleg copies.

Apart from the criteria mentioned above, information is further to be regarded as a (marketable) economic good only if it is relatively scarce (Bode, 1993, 62). Scarcity in information goods, however, can assume an entirely different form than the one hitherto accepted. For relative scarcity, it is generally assumed that (unlimited) human needs are facing a limited amount of goods to satisfy them. Now, information is generally available in abundance, so that scarcity occurs elsewhere, namely in the recipient's subjective processing options. Searching for a particular information good, one is simply unable to look at or listen to everything on offer, because the human capacity for processing information is limited. Hence scarcity can be the result, for instance, of the restricting factor of concentration (Franck, 2007).

Economically speaking, the concept of goods encompasses both **products** and **services**. Analogously, we can distinguish between information products and information services (Kuhlen, 1996, 83 et seq.). The constitutive feature for this distinction is the use of an external factor, such as a company's disclosures for the benefit of the auditor (Bode, 1997, 462 et seq.). If an external factor is involved, one would thus have to speak of an information service. This, however, is not wholly correct, insofar as any information service process always results in an information product, e.g. the finished audit report. Thus an online database can be regarded as an information product

that emerged from out of other knowledge or information products as the result of various forms of information work, e.g. referencing, indexing and the database-appropriate structuring of publications (Kuhlen, 1996, 84).

Information services, on the other hand, we would have to call researching in a database, for example. The results of those services which would then be compiled into an information product for a client. A live concert, which at first glance one would regard as a pure information service, becomes an information product in the end, i.e. something digitizable.

It soon becomes clear that the distinction of products and services, so clear in economics, becomes blurred when considering information goods. When discussing information goods in the following, we will do so aware of the fact that there may be pure information products, but no pure information services. A service is always being rendered if an external factor applies to the creation of an information product. Under this viewpoint, information goods and information services may be regarded as virtually identical.

More important for or further deliberations are two other distinctions between different kinds of goods common in economics. Depending on the position in the value chain in which they are used, there is a distinction between consumer goods and investment goods, and the method of their application allows us to distinguish between durables and consumables. **Consumer goods** are used by (end) consumers. **Durable goods**, on the other hand, are used by non-consumers (enterprises, administrations etc.) in order to create services. **Durables** provide a lasting, or at least long-term value, whereas **consumables** are used up either immediately or have a very limited scope of action (e.g. Olfert & Rahn, 2008, 736). If we combine these two distinctions, we get the following matrix:

Value chain Kind of Usage	Production (durable goods)	Consumption (consumer goods)
Durables	Technological potentials, which can become productive in combination with other goods and/or manpower (e.g. facilities, machines, office equipment)	Have a longer lifespan and, generally, various uses (e.g. clothes, furniture)
Consumables	Go into other products or contribute to the process (e.g. fuels, lubricants)	Have only one or very few uses (e.g. food, articles of hygiene)

Figure 2.1: Classification of Goods.

Let us now turn to information goods. At first glance, it appears obvious that they can be used by both consumers and enterprises etc. The same information, e.g. concerning the price of a good, can serve as an important decision input for a consumer as well as a company. When discussing information content, information tendentially has the status of a **consumable**. Strictly speaking, information cannot be consumed, yet there are many information goods that are used only once or in a limited scope; thus a newspaper, for instance, is bought in order to read the articles once only. The information relevant to the reader is processed, after which the newspaper is usually discarded. Company, market and press information is generally to be regarded as a consumable. It is subject to high rates of change (e.g. due to fluctuating exchange rates, quotes, consumer preferences, product offers) and thus has to be produced permanently and consumed anew, respectively (Ernst & Köberlein, 1994, 6). Sjurts (2002, 11) speaks of “time elasticity” as a fluent distinguishing characteristic. Time-elastic (consumable) goods lose a significant part of their value after being consumed, whereas durables do not, or much more slowly. Among consumables are thus also music, films or literature, if they are subject to strong falls in value and are only consumed once or very few times. If this form of content is used repeatedly, however—which may very well be the case for a favorite piece of music, which one listens to again and again over a long period of time—it will come closer to having the characteristics of a durable. However—and this is in opposition to market information—use or consumption are not coupled with the primary goal of increasing the consumer’s knowledge. The main value is in the actual consumption itself. Apart from the purely cognitive aspect of information reception, the consumption of such goods is mainly motivated by affective (aesthetic, emotional etc.) aspects.

Information goods can also be **durables**. Software is such a kind of information good, being installed once and used repeatedly. This is the case for simple office communication software right up to complex enterprise-resource-planning (ERP) applications. Content is created or processed with the help of software, and is then sold or used for other, e.g. in-house, purposes. The case is analogous for software used for telephony or video conferences, for example. These, too, are durables, as they facilitate communication and cooperation with others (Messerschmitt, 1999, 163).

In the following, we will separate information goods into software and content (Messerschmitt, 1999, 139 et seq., 159), primarily regarding the former as durables and the latter as consumables.

Kind of Usage \ Value chain	Production (durable goods)	Consumption (consumer goods)
Durables (software)	<ul style="list-style-type: none"> <li>• Operating systems</li> <li>• Software applications (e.g. for office communication, enterprise resource planning, management information, databases)</li> </ul>	<ul style="list-style-type: none"> <li>• Operating systems</li> <li>• Software applications (e.g. for office communication, audio/video playback, databases, games)</li> </ul>
Consumables (content)	<ul style="list-style-type: none"> <li>• Business information (e.g. acquisition costs, market rates, market and communication analyses)</li> </ul>	<ul style="list-style-type: none"> <li>• Technological information, e.g. about production methods</li> <li>• Business information (e.g. market prices, market rates, product tests)</li> <li>• News</li> <li>• Music, images, videos, literature</li> </ul>

Figure 2.2: Classification of Information Goods.

### 2.3 Digital Information on the Information Market

We will separate the totality of digital information goods in two: software (applications, mainly used as durables) and content (information content, used primarily as consumables). Software can be roughly subdivided into either standard or individual software. For content, we will draw a somewhat blurred line between e-content (serving mainly entertainment purposes) and p-content (tailoring to professional needs) (Spinner, 2000, 179; see also Stock & Stock, 2008, 28 et seq.). In e-content, we find digital versions of images, pieces of music and videos, and online games. The Web 2.0 services are also filed into this category. P-content comprises business and market information and news, legal information as well as scientific, technical and medical information (STM information).

Apart from products with content (such as a piece of music on iTunes or a research article in a professional journal on Elsevier), there are services that help locate such products in the first place: online search engines. Search tools either provide a broad coverage with no depth of content (like the search engine Google) or a technically restricted coverage that aims at depth (such as the information services STN, LexisNexis or DIALOG). The latter are almost exclusively situated on p-content markets and offer their services for a fee, while online search engines are free of charge for information seekers, recovering their investment via

online advertising instead, effectively selling publicity. Figure 2.3 will provide a quick representation of our little classification of digital goods on the information market.

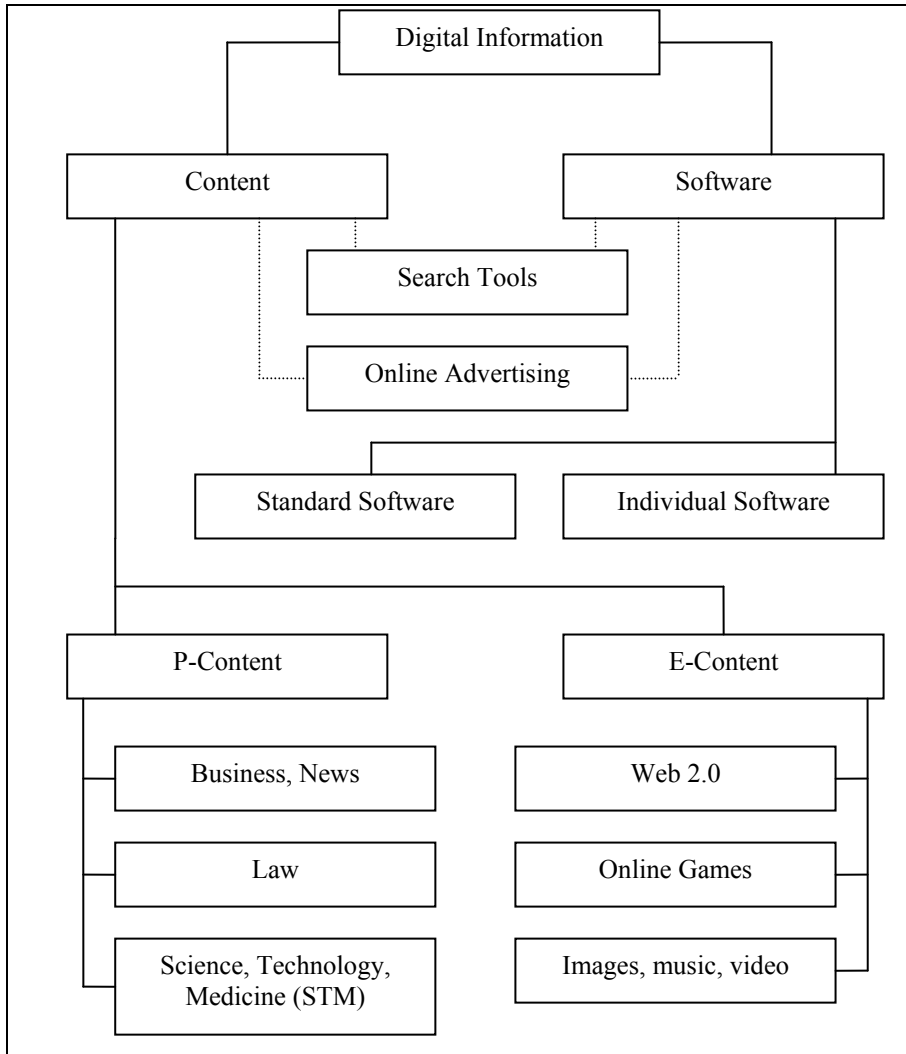


Figure 2.3: Rough Classification of Digital Goods on the Information Market.

In Chapters 7 through 15, we will take a closer look at the information goods addressed above. Here we can describe a select few typical products exemplarily,

one at a time; we do not aim to comprehensively represent all product groups or products, as there are thousands of relevant offers on the World Wide Web and particularly the Deep Web, but restrict our focus on a more analytically oriented overview.

## 2.4 The Economic Significance of the Information Market

The significance of the information markets, of its products and services, must be considered under two aspects. On the one hand, there is its direct significance, expressed in numbers of employees or sales figures. On the other hand—and this may even be the more important aspect—we will regard its indirect significance.

The **indirect economic significance** of the information market is expressed in the customers of this market having made economically significant decisions, or optimized business processes, on the basis of information products acquired. Thus for example a scientific article (acquired for around €25) can inspire an R&D staffer to come up with an idea that results in a completely new production method, netting the company several million Euros. Or a company dossier produced by the in-house information service was at the basis of the decision to acquire that company, allowing the buyer to achieve high profits. In the reverse case, a failure to perform research can lead to notable losses, even leading up to insolvency, e.g. if one misses technological developments about to happen (information which could have been acquired from content aggregators for a few hundred Euros), or if one is thrown into dire straits oneself via the insolvency of a supplier or client, only because one has neglected to acquire documentation regarding the former business partner's solvency. A further example: if a company makes insufficient use of software, this can very well lead to competitive disadvantages. The disadvantage of this indirect economic significance of information is that it cannot be expressed quantitatively.

This is—at least principally—different for the **direct economic significance**, as estimates regarding the market volume are available in this case. Lacking global statistics, we will here present our own informed estimate, compiled on the basis of diverse sources from market research institutes. The following values apply for the totality of digital goods (worldwide, 2009):

Software	€164bn
P-Content	€15bn
E-Content	€6bn
Online Advertising	€50bn
<i>Total Market</i>	<i>€235bn.</i>

For software, a huge portion of the entire market volume is a single company's (Microsoft; €43bn in the business year 2008/2009); the situation for online advertising is similar (Google; €17.5bn in 2009). The market for p-content is dominated by the submarket of STM information. For e-content, online games in particular generate significant profits; other submarkets such as Web 2.0 services or Web-



TV do not show any sizeable profits at the time. Web 2.0 services e.g. Facebook, make money with online advertising.

## 2.5 Conclusion

Only available in the printed version.
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## 2.6 Bibliography

- Bode, J. (1993). *Betriebliche Produktion von Information*. Wiesbaden: DUV Dt. Univ.-Verl.
- Bode, J. (1997). Der Informationsbegriff in der Betriebswirtschaftslehre. *Zeitschrift für betriebswirtschaftliche Forschung (zfbf)*, 49(5), 449–468.
- Endres, A., Schröder, M., Kloepfer, M., Marburger, P., Endres, A., & Marburger, P. (2004). Emissionszertifikate und Umweltrecht. 19. Trier-Kolloquium zum Umwelt- und Technikrecht vom 28. bis 30. September 2003. Berlin: Schmidt.
- Ernst, M., & Köberlein, C. (1994). Bedarf und Unsicherheit. Eine ökonomische Betrachtung von Information und Qualität auf Informationsmärkten. *cogito*, 10(1), 6–10.
- Faßler, M. (2002). *Was ist Kommunikation*. 2<sup>nd</sup> ed. München: Fink.
- Franck, G. (2007). *Ökonomie der Aufmerksamkeit. Ein Entwurf*. München: Dt. Taschenbuch-Verlag.
- Gabler Wirtschaftslexikon - Online Editon (2011). Keyword: Gut. Published by Gabler Verlag.
- Hopf, M. (1983). *Informationen für Märkte und Märkte für Informationen*. Frankfurt/M.: Gabler.
- Kuhlen, R. (1996). *Informationsmarkt. Chancen und Risiken der Kommerzialisierung von Wissen*. 2<sup>nd</sup> ed. Konstanz: UVK.
- Messerschmitt, D.G. (1999). *Networked Applications. A Guide to the New Computing Infrastructure*. San Francisco, CA: Kaufmann.
- Olfert, K., & Rahn, H.J. (eds.) (2008). *Lexikon der Betriebswirtschaftslehre*. 6<sup>th</sup> ed. Ludwigshafen am Rhein: Kiehl.
- Pethig, R. (1997). Information als Wirtschaftsgut in wirtschaftswissenschaftlicher Sicht. In Fiedler, H. (ed.), *Information als Wirtschaftsgut. Management und Rechtsgestaltung* (pp. 1-28). Köln: Schmidt.
- Pross, H. (1972). *Medienforschung. Film, Funk, Presse, Fernsehen*. Darmstadt: Habel.
- Schumann, M., & Hess, T. (2006). *Grundfragen der Medienwirtschaft*. 3<sup>rd</sup> ed. Berlin, Heidelberg: Springer. (Springer-11775 /Dig. Serial]).
- Shapiro, C., & Varian, H.R. (2003). The Information Economy. In Hand, J.R.M. (ed.), *Intangible Assets. Values, Measures, and Risks* (pp. 48-62). Oxford: Oxford University Press.

- Sjurts, I. (2002). Strategien in der Medienbranche. Grundlagen und Fallbeispiele. 2<sup>nd</sup> ed. Wiesbaden: Gabler.
- Spinner, H.F. (2000). Ordnungen des Wissens: Wissensorganisation, Wissensrepräsentation, Wissensordnung. In Proceedings der 6. Tagung der Deutschen Sektion der Internationalen Gesellschaft für Wissensorganisation (pp. 3-23). Würzburg: Ergon.
- Stock, W.G. (2007). Information Retrieval. Informationen suchen und finden. München; Wien: Oldenbourg.
- Stock, W.G., & Stock, M. (2008). Wissensrepräsentation. Informationen auswerten und bereitstellen. München: Oldenbourg.
- Wetzel, A. (2004). Geschäftsmodelle für immaterielle Wirtschaftsgüter. Auswirkungen der Digitalisierung. Erweiterung von Geschäftsmodellen durch die neue Institutionenökonomik als ein Ansatz zur Theorie der Unternehmung. Hamburg: Kovač.