

## Chapter 22

# Signaling

### 22.1 Market Failure Due to Information Asymmetries

Information asymmetries are present when one side of the market is better informed than the other. Akerlof (1970) demonstrated on the example of used cars that market coordination no longer works as well as it could in such a case. Despite the willingness to buy or sell at a specific price, supply and demand find no way to meet. Such a market failure is the result of the consumer's inability to (adequately) recognize the product quality of an offer, and their willingness to pay thus being lower than would be required to pay the price demanded by the providers. No sale is accomplished, even though the consumers would be willing to pay the asking price if only they estimated the product's quality more highly. It is thus of crucial importance for companies who, compared to other providers, offer higher quality and set correspondingly higher prices, that the customer be able to recognize the former aspect. The customer requires clues to separate high-quality providers from others who sell lesser services, even if the latter pretend to sell high-grade wares, e.g. via advertisements promising quality. The existence of such black sheep leads to welfare losses if either the quality available on the market decreases due to the providers of said quality withdrawing, or if the services on offer deteriorate slowly over time, unnoticed by the customers (Linde, 2008, 39 et seq.). In the former case we speak of "adverse selection", in the latter of "moral hazard". Adverse selection means that the quality of an offer is unchanged from one transaction to the next; moral hazard can occur if providers are in a position to change the quality (Monroe, 2003, 77 et seq.). This is, of course, undesirable if it means deterioration.

### 22.2 Market Communication via Signals

How, then, can a provider show his customers that he is trustworthy, that his products are in fact as good as he claims they are? This is where signaling comes into play. Companies can use signals to communicate with market participants. Each company active on the market sends signals to the different market players

via its behavior. A new product announcement, for instance, is a signal to the customers that they will soon be able to make an attractive purchase, which will be worth the wait. This might result in them abstaining from the competition's current offer. The competitors are signaled, via this announcement, that their product's market position will change due to the new offer. This may lead them to preemptively lower their prices or to speed up their own product development. Complementors and suppliers may be led by this signal to develop hopes for lucrative commissions and thus decline other requests. A mere communicative act can thus directly influence the behavior of the other market players. Signals can also be sent indirectly, for example if companies build production capacities at a particular location, change their prices or enter into an alliance with others.

The concept of signaling dates back to Spence (1973), who represents it as an opportunity to transmit information from the better-informed to the worse-informed market side in case of an asymmetrical distribution. For him, signals are observable characteristics that can yet be influenced by the sender. The duration and quality of a job applicant are examples for a signal in the context of this initial discussion started by Spence. Today, signals are seen as a multiform phenomenon, which is why Grant and Nippa (2006, 150-151) define, with a slightly broader perspective:

The term signaling is used in order to describe the selective communication of information to competitors or customers [or other market participants, A/N], the aim being to deliberately change their perception, decision-making and behaviors, respectively, in order to provoke or avoid certain reactions.

The necessity of signaling results from existing information asymmetries. There is a downward gradient of information between two market players, in which one side—the company, in this case—is better informed than the others, i.e. customers, competitors etc. Information asymmetries can consist of the company being able to better gauge the quality of its products, or knowing more, earlier, about its strategic aims. Signals can be used to reduce, keep up or even increase such existing asymmetries (McLachlan, 2004). Signals always play a role for unobservable characteristics or intentions about which a creditable statement must be made. If, for instance, the buyer of a software application is not provided with a trial version to convince him of the product quality, one must work with signals instead, e.g. offer him a money-back guarantee or be able to produce good test reports. The customer is thus made more secure in hoping that the product will be as good as advertised. Signals are a tried and tested means for quality providers to show their product quality and thus justify a higher price.

The interests of lower-quality providers, though, swing another way entirely. They would rather conceal the fact that their offers are flawed or even harmful to the consumer. In this context, Parker (1995, 304) mentions the tobacco industry, associations promising life after death and manufacturers of anti-wrinkle creams

as typical providers of “lemons”, i.e. products that cannot keep their promise of quality or even harm the customer. Such providers have a vested interest in existing information asymmetries be maintained.

Here it becomes clear on the one hand that the quality signals already mentioned have a strategic dimension, and on the other hand that there are other kinds of signals, which are not directed merely to the customers but also to other market players (competitors, suppliers, complementors). Such strategic signals meant to influence the market are of particular significance if a new product is being introduced, a standard created or market entry barriers built up, for example. Signals used in these contexts can be meant to reduce or increase information asymmetries (Irmischer, 1997, 153-154). New product announcements, for instance, initially create market insecurity. The different players may ask themselves what exactly the product will look like, what it can do and how much it will cost on which market. Such a creation of a market asymmetry can be of advantage vis-à-vis the competition, if it helps prevent them from entering the market themselves. The customer, on the other hand, should be signaled early on that it is worth waiting for the new product instead of buying a competing one. If the company has a reputation for providing quality, this will show the customer that he can expect a good product, while the competition’s insecurity is increased, as they have to assume that the announced product will, in all probability, be good and hence be accepted by the consumers.

It is obvious that the variety of signals must be handled strategically in order for them to work together to create the intended effects.

Of central importance for every kind of signal is its credibility, and this in turn is dependent on the costs of sending the signal. Signals become more credible in proportion to the costs that would result if they were untrue. Offering warranties is relatively straightforward for a company that produces high-quality wares, as they will be made very little use of. However, if a bad product is enhanced with a warranty in order to signal high quality, this can lead to ruin.

In the following, we will present signaling as a strategic instrument of communication. As such, it can be attributed to a company’s communication policy. On the one hand, we will concentrate on **product-related quality signals**, and specifically only those that serve to decrease information asymmetries. An extensive economical discussion on this subject can be found in the literature concerning New Institutional Economics (e.g. Göbel, 2002). On the other hand, we will introduce **signals of strategic market communication**, which are mostly multivalent in their direction of effect, i.e. they affect the single market players in different ways. The origins of such strategic signaling activities are military in kind.

The use of diversionary tactics and misinformation was well developed in military warfare. In the year 1944, such maneuvers worked so well that the German high command believed, even as the allies were landing in Normandy, that the main invasion would take place near Calais (Grant & Nippa, 2006, 151).

In the context of economics, signaling has become a subject of Game Theory, which has significantly developed it over the last few years. Here signals are regarded as an integral part of companies' strategic behavior (e.g. Nalebuff & Brandenburger, 1996).

### **22.3 Approaches to Reducing Product-Related Quality Insecurities**

In the third chapter, we got to know the existence of information asymmetries as an economic particularity of information goods. They result from the problem of quality assessment, which can be very different when buying (information) goods, depending on their characteristics. According to Darby and Karni (1973, 69), we can distinguish between three information-economical characteristics:

We distinguish then three types of qualities associated with a particular purchase: search qualities which are known before purchase, experience qualities which are known costlessly only after purchase, and credence qualities which are expensive to judge even after purchase.

Depending on what kind of information good is being bought, these three features are differently pronounced. Clearly pronounced search qualities can be found in strongly standardized information goods, such as price information (e.g. stock market and exchange rate information or offers by price agencies). Here the quality insecurities are very low (Linde 2008, 35-36). In a market research report, though, credence qualities prevail, as the buyer—even if he is an expert—cannot comprehensively determine how much effort and diligence were used in conducting the investigation. Strongly pronounced experience qualities, in turn, are displayed by most software offers. If the software has been bought and the user is able to collect his experiences with the product, it will be shown very soon whether it is as easily installable and usable as advertised.

Overall, most information goods display little search, but highly pronounced experience and credence qualities. It is thus generally difficult for the buyer to comprehensively gauge the product's quality before buying. For information providers who want to signal that they offer a certain quality, it is advisable to adjust their measures according to the three mentioned information-economical qualities. According to Adler (1996, 101 et seq., 134 et seq.), three approaches to reducing information asymmetries can be distinguished. Adler talks of performance-related information search, as well as performance-related information substitutes that relate to all services. Performance-related information search aims to make quality properties verifiable before buying. Such inspection offers directly reduce existing information asymmetries. They are not a form of signaling—we only speak of signals when a (cost-related) statement is made concerning a non-observable charac-

teristic. These are information substitutes meant to signal product quality without making it tangible, as a substitute for direct product information, so to say.

### 22.3.1 *Inspection Offers*

If information asymmetries exist, the provider can first support the customer in terms of performance-related information search. This will reduce his insecurity, and he can better gauge the quality of certain of the desired information good's features (e.g. the style of an author, band or artist, the layout of a text or the entertainment factor of a game) before committing to buy. This can be done by offering parts of the information good or information about the good. The provider intends to make quality properties of the offer accessible to the customer for checking. The provider thus gives the customer options for inspecting the good, hence the term inspection offers. In the following, a few variants of inspection offers will be introduced:

In order to reduce information asymmetries, providers can make parts of the information good **directly** available for inspection via a preview (Varian, 1998, 4). Previewing an information good may consist of the customer being able to listen a part of a music title, read extracts from a book or test sections of an e-learning application. For software, the same effect can be created if test licenses or downgraded versions are made available. In this way, the provider can transform experience qualities of the good into search qualities. The customer will not find out that he doesn't like a CD or game after having bought it, since he can answer this question for himself before.

For providers, however, such offers are not so straightforward. They must take care not to make so much of the information good available that the demand is already satisfied during the trial period, before buying, thus drastically reducing or even eliminating the customer's willingness to pay. Arrow (1962, 615) points out this so-called information paradox, as

... there is a fundamental paradox in the determination of demand for information; its value for the purchaser is not known until he has the information, but then he has in effect acquired it without cost.

This problem particularly applies to content offers. If customers have read the computer magazine in the shop, or have obtained the address of the cheap provider they searched for, it is very probable that their willingness to pay is next to zero. However, the fact that this does not always have to be the case is shown by counterexamples of shareware providers asking the users to only pay for the product after downloading and using it or artists (e.g. Nine Inch Nails or Radiohead) who offer their music on the Web for free and leaving it to the customer whether and how much to pay for the download. Here it seems we can distinguish between information offers as commodities and as consumables (Linde, 2008, 9 et seq.). It is generally to be assumed that the decrease of willingness to pay for information

goods that are “consumed” (e.g. a newspaper article) is more pronounced than it is for commodities (e.g. a video game).

Inspection offers for **commodities** are already widely available these days. Most software offers can be tested for a certain time, there are trial subscriptions for newspapers and magazines, and even music can frequently be listened to before buying. Such offers are often very extensive, and the customer can check the quality almost entirely. He only has to pay for lasting usage privileges or continued delivery.

Comprehensive inspection offers are possible for **consumables** as well, however. Varian (1998, 4) reports that online offers of books can have a positive effect on sales:

The National Academy of Sciences Press found that when they posted the full text of book [sic!] on the Web, the sales of those books went up by a factor of three. Posting the material on the Web allowed potential customers to preview the material, but anyone who really wanted to read the book would download it. MIT Press had a similar experience with monographs and online journals.

Here it is shown how well versioning can be used: the information contents are made available to the customer in their entirety, but in a form that allows for quality verification while making actual consumption unattractive. The customer can get to grips with content, style and layout on his computer, but cannot read the book on his sofa, must make do—depending on the design—with a black-and-white version on the screen and may not have any access to supplementary features, such as an index. All of this he will only receive after buying. If, however, the customer is only in need of one information, an image or a text passage, this rudimentary version will suffice and he will steer clear of a purchase.

Free offers (Follow-the-free) or offers, in which customer only pay what they feel like (Pay-what-you-want) work in the same direction. They serve to surmount the problem of quality insecurity as a first step, in order to generate profits later (Choi et al., 1997, 243; Kim et al., 2009, 55). The non-assertion of existing copyrights can here be seen as an equivalent of very low introductory prices. Both variants have

...similar potential to signal high product quality (Takeyama, 2009, 292).

With regard to asymmetrical information concerning product quality, it is indeed rational for quality providers to make the introductory price very low, even zero, or abstain from asserting their copyrights and tolerating illegal copies. In both cases, a quality provider can signal that he is sure of compensating for lost profits later, because he knows about the quality of his product and has no reason to fear the users’ experiences. For lower-quality providers, this would be irrational behavior.

Specifically the degree of product protection here becomes a quality signal (Takeyama, 2009).

If the customer is granted partial or full access to information goods, the provider should always take care to make a transfer of quality judgments from the free offer to the priced one easily realizable, as existing information asymmetries will not be sufficiently reduced otherwise. Finally, in order to generate profits, the free versions should be designed in such a way that quality judgments are made possible but the demand for consumption is not satisfied in full (Stahl, 2005, 290).

Now, quality information can be transmitted not only directly, by (partially) disclosing the information, but also **indirectly** as meta-information, such as the artist's name, title, year of release or publisher. This also comprises abstracts, which provide a compressed overview of text contents without making the original accessible.

Inspection offers are extremely effective in order to reduce buyers' insecurities regarding the quality on offer. However, they are also obviously limited in that they lead to the surrender of goods, either completely or in their vital parts. The danger, particularly for consumables, is of interest in the product, and hence willingness to pay, dissipating. If, then, it is not the company's intention to make its information offers available for free, it must retain at least parts of the good. Certain quality properties of the information good will, in that case, obviously be tried and judged only after a purchase has been made. These are the so-called experience qualities. It is very important for information providers to be aware of the fact that the search and experience qualities are not inherent to the product, but that they themselves can, as providers, determine which quality properties the customers can inspect before buying and which can only be accessed after buying. Central to this decision is the estimation of how the customer's willingness to pay will develop on the back of the inspection. The more it suffers, the more it is recommended to either work with different versions or to keep the inspection offers limited.

### 22.3.2 *Service or Product-Related Information Substitutes*

Now, what can a provider do in order to convince the customer of his product's quality without making inspection offers? He must try to reduce the customer's quality insecurity concerning the post-purchase situation. The customer must receive signals that convince him—despite buying the proverbial pig in a poke—that he will not experience any (quality) disappointment afterwards. This can be accomplished by offering information substitutes: signals that relate to the provider's marketing policy as perceived by the customer (Adler, 1996, 103). This sort of signal serves as a substitute for inspection offers, i.e. access to the information good itself.

Such performance-oriented information substitutes initially comprise all manner of **rating** (testimonials, reviews). Book reviews, editorships, forewords or comments by famous persons or institutions, customers' judgments, criticisms or product reviews, for example on opinion sites such as [www.ciao.de](http://www.ciao.de) are all opin-

ions by third parties that point to the quality of a good. Trusting the evaluators and their ratings saves the customer the effort of directly testing the offer himself. The submission of ratings by professional critics—but increasingly also by the consumers themselves—is extremely prevalent for films, books and music. For video games, specifically, the great significance of external ratings as a signal of the product's quality is widely accepted. Video games are reviewed in a wide variety of magazines, with an increasing number of online portals, particularly in the USA, now taking over this task previously the domain of the specialized press (Jöckel, 2008, 60).

A similar function is performed by **honors** and awards that can be won by books, music or films. A literary prize, a gold record or a Grammy Award generate short-term attention, thus benefiting sales, and serve as a long-term quality signal, which can be empirically proven (Clement et al., 2008, 771).

The classical quality signal to reduce information asymmetries for experience qualities, as already proposed by Spence (1976), is the **warranty**. This signal, however, is only really effective if there is a negative correlation between warranty costs and assured quality (Spence, 1976, 592).

For a signal to be effective, it must be unprofitable for sellers of low quality products to imitate it. That is, high quality sellers must have lower costs for signalling activities.

The offer of a warranty signals the consumer that the provider is sure of the quality of his product, as otherwise he would have to expect financial losses. This quality promise is secured by the commitment to correct any problems that arise over the duration of the warranty, up until to a full refund. Backhaus and Voeth (2007, 460 et seq.) point out that warranties only become a marketing instrument if they go beyond the legally regulated warranty obligations (§§ 433 et seq. German Civil Code). Such extensions can be made chronologically, by providing warranties that go beyond the legally regulated minimum periods. This can go right up to a lifetime warranty, which can exceed the maximum statute of limitations, as specified in the Civil Code, if it is exactly stated which (product) lifespan it is meant to refer to. Warranties can also be extended with regard to content, if they guarantee the functioning of certain or even all features of a product or a certain period. An unusual example of an extension of content was provided some time ago by an American automobile manufacturer. General Motors offered its customers that whoever

...buys an Oldsmobile has 30 days or 1500 miles to think about his decision. If he decides that he doesn't like the car, he can drive onto the seller's lot and have the deal annulled. [...] Initial fears that GM's generous warranty might be abused have not been validated. Of the 65,000 buyers, only 306 returned their Oldsmobile in the three months since the start of the campaign (Deysson, 1990, 47).



Another example is the company Northern Light, who in 1997 brought a search engine on the market that could not only search websites but also the full text of entire articles (Notess, 1998). The freely usable search engine was without ads; the necessary profits were meant to be generated from article sales. What was special about it was the money-back guarantee, where purchased articles could be returned for a full refund if they were not liked.



## Journal of Business Strategy

**Title:** Where style meets substance.  
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**Summary:** Management experts believe that leadership could be the number one strategic concern of businesses in the 21st century.

**Source:** Journal of Business Strategy  
**Date:** 01-02/1995  
**Price:** \$2.95  
**Document Size:** Long (8 to 25 pages)  
**Document ID:** SL19970922040043754  
**Subject(s):** Leadership--Technique; Management--Technique  
**Citation Information:** (v16 n1) Start Page: p48(12) ISSN: 0275-6668  
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**Document Type:** Article

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Figure 22.1: Money-Back Guarantee for Northern Light. Source: Northern Light.

In 2002, Northern Light withdrew from the free Web search business in order to concentrate on the more successful development of search engines for business customers. The reason given was that business with ad-financed search had developed better. Two weeks after this decision, the company was bought by Divine, who in turn announced an agreement to deliver premium content to Yahoo! (Hane, 2002). Whether excessive use made of the offered warranty played a decisive role in this development cannot be proven. For digital goods, in any case, the danger of fees being reclaimed is relatively high:

Unlike physical products, returning a digital product seldom prevents the consumer from using the product in the future (Choi et al., 1997, 244).

Warranties can relate to current purchases, but also to ones yet to make (Backhaus & Voeth, 2007, 461 et seq.). They are offered at the time of purchase, yet relate to future services. Such “performance bonds” (Backhaus & Voeth, 2007, 462) are made, for example, by porcelain manufacturers, who assure the customer that he can buy replacements for certain product lines over a specified period of time. The analog case for information providers is the granting, to subscribers of a magazine or information service, of the right to cancel their obligations at any time. The provider wants to signal, in this way, that the quality of his product will be just as high in the future.

Guarantees transform experience qualities into ‘quasi-search qualities’.  
No more quality verification costs then need to be incurred for these  
qualities (Irmischer, 1997, 267).

The more product qualities are encompassed by the warranty, and the longer it runs, the better it vouches for high quality. The demander’s insecurity relating to experience qualities can thus be reduced, even entirely in the case of a full warranty. The fact that providers hesitate to go in for the latter is due to another sort of information asymmetry; a moral-hazard problem is created on the side of demand (Cooper & Ross, 1985). If a provider offers a full warranty, the demanders no longer have any incentive to treat the products with proper care, or even deliberately induce the warranty case. This is the reason why full warranties do not exist.

A summary of empirical analyses of warranties by Adler (1996, 111 et seq.) confirms the relation between extent of warranty and quality: brands with an above-average warranty also scored above-average results in product tests. Besides, from the provider’s perspective—top managers were being polled—warranty offers play a particular role for products that cost a lot, are viewed as technologically complex, are seldomly bought and produced by relatively unknown manufacturers. This also holds for the customers’ perspective. Furthermore, warranties—at least for higher-grade products—are an important factor in customers’ perception of quality. If warranties are offered, they represent a high product quality to the customers. Warranties enable quality providers to work with higher prices and thus increase their profit margin instead of having to enter price fights with lower-quality providers (Monroe, 2003, 85).

For the provider, it is advisable to align the extent of his warranty with the market standard. Shimp and Bearden (1982)’s “too good to be true” hypothesis empirically confirms the fact that very extensive warranties can even create the opposite effect and cause skepticism and mistrust in consumers, if the warranty promise goes too far above the market standard and is made by a provider with a bad reputation or none at all. It is thus not recommended to providers with a low market reputation who have solved their quality problems to offer extensive warranties in order to be accepted by demanders as providers of higher quality. A better way is to generally improve credibility in the customers’ perception by making

it clear what the cost would be for the provider if the signals transmitted were false (Boulding & Kirmani, 1993, 120).

Warranties directly affect the reduction of information asymmetries relating to a good's experience qualities. Apart from the signaling function, they serve at the same time a backup function (Adler, 1996, 131). In case of a failure to keep the performance promise, the customer is able—supported by the law—to take the provider up on his promise. Whether or not the provider has a reputation for being particularly reliable or service-oriented does not play any role here at first.

The case is slightly different if signals are only credible when they are accompanied by a corresponding reputation. A high **price**, for instance, is not a quality signal in itself, but only if the buyer can assume that it is set by a quality provider and is not merely a “rip-off”. Klein and Leffler speak of a reputation mechanism that must be in play for certain signals to be credible. Next to the price, they mention incurred advertising costs as signals for reducing insecurity (Klein & Leffler, 1981, 618). A high price at first appears plausible from the customer's perspective, since high quality is generally accompanied by higher manufacturing costs. At the same time, it is a signal of service quality, as companies stand to lose more from high prices, if customers are unhappy and stay away from the company in the future (Göbel, 2002, 326). The fact that the price, besides representing a monetary restriction in purchases, also has an information function, being interpretable as a quality signal, was addressed by Scitovsky as early as 1945. However, the correlation between price and perception of quality cannot be directly verified. While there are many theoretical and empirical studies on the subject, they do not present a unified picture, a weak positive correlation can be assumed at best (Adler, 1996, 121). If, on the other hand, the conditions under which consumers tend to infer a correspondingly higher product quality from a higher price are taken into consideration,

...it can be regarded as proven fact, today, that the price serves *less* as an indicator of quality

the more price, and the less quality, are weighted by the consumer as shopping criteria, and the less pronounced product involvement is,

the greater the demander's shopping experience and level of knowledge are, which conversely means that the price serves particularly often as a quality signal for (real) innovators,

the more and the more reliable other options for quality assessment are available,

the less pronounced the range of variation of quality and prices are in the respective product category,

the fewer other quality indicators (e.g. brand, name of provider company etc.) are available and

the less important the prestige value of a product is in comparison with other quality properties (Diller, 2008, 151 with other sources).

Diller further points out that price-oriented quality assessment does not mean, in most cases, that a quality product is being purchased. It can even happen that the customer obtains a lower-quality by choosing a relatively expensive offer. As such, the price cannot be regarded as a reliable yardstick for quality.

If consumers still frequently resort to it, then only because they overestimate the risk of low prices, or absolutely want to see their minimum quality requirements fulfilled, respectively (disjunctive assessment behavior), and/or the sacrifice of cash utility is still a relatively minor factor in the relevant quality range in case of increasing prices (Diller, 2008, 153).

Besides the price, the amount of **advertising expenses** is seen as a signal to reduce product-related quality insecurities. Nelson (1974) was the first to analyze the relevance of advertising as a signal for unknown product quality. Since the consumers cannot check the validity of the advertising promise prior to purchase, thus Nelson's line of thought (1974, 730 et seq.), the contents of the ads will be greeted with skepticism due to their presumed intent to manipulate. There is thus no direct information value inherent to advertisements—apart from their simple existence. However, information may be indirectly inferred. The extent of advertising can, in terms of experience qualities, be seen as a quality signal as well as an indicator for a good relation between price and quality. Kirmani and Wright (1989) base this on psychological factors, according to which most people believe that the level of performance brought to bear on any given task mainly hinges on one's belief in one's own success. Advertising expenses are viewed as an indicator for a provider's marketing efforts. Analogously, consumers infer that the provider has a lot of trust in his product's quality and subsequent success. This correlation is restricted, however, if the customers are aware that the provider has no interest in repeat purchases, or that advertising expenses only represent a small part of the overall budget, for example. Excessively high advertising costs are also counterproductive and create mistrust. Experimentally, an inverted-U function emerged for the expectation of quality vis-à-vis increasing perceived advertising expenses (Kirmani & Wright, 1989, 349). This means that quality expectation is only positive at a medium level of advertising expenses, and not at very low or very high levels. Kirmani and Wright also analyzed from which elements of an advertising campaign consumers infer the extent of advertising efforts: product ratings (testimonials) or the choice of advertising medium are crucial influence quantities.

Thus we have some first empirical results that attest to the extent of advertising expenses actually being used as a quality signal by the consumers under certain conditions (Tolle, 1994, 934).

Slightly differently conceived empirical analyses of the relation between advertising expenses and the quality/price ratio produce contradictory results, however. Here the question of whether there actually is a positive correlation, and consumers really interpret the amount of advertising costs as a signal for the relation between quality and price, stays open (Tolle, 1994, 930-931.).

Another quality signal is represented by a product's **market share** (Katz & Shapiro, 1985, 424). This idea was already substantiated in several model analyses (Haller, 2005, 226). Specifically for the audio-carrier market, Haller (2005, 226 et seq.) shows via a signaling model that consumers have the impetus, under certain conditions, to buy from the manufacturer who announces the highest expected sales figures, since this can be interpreted as a signal for the quality of the product. One of the conditions Haller analyzed is that the price differences for the different qualities available on the market must be relatively low. Also, the signaling costs for lower-quality providers, e.g. in the form of bad reviews and/or lower sales figures, must be significantly higher than for an audio-carrier producer who offers high quality (Haller, 2005, 236).

Market share can be seen not only as a quality signal, but also as a quality-induced cause of the occurrence of network effects (Katz & Shapiro, 1985, 424). A large market share creates positive network effects, as the information asymmetries for the goods concerned are reduced more effectively. There is a larger number of consumers who can exchange information about the product quality (Hutter, 2003, 267). Here it is insignificant whether this information stems from experiences with legally or illegally acquired products. Bootleg copies contribute to the reduction of information asymmetries just as much as legal ones (Takeyama, 2003).

### 22.3.3 *Information Substitutes Relating to All Services*

The use of performance-related information substitutes serves to reduce insecurities regarding a product's experience qualities. They are generally ineffective for credence qualities. Warranties, for example, presuppose that the customer can assess the respective feature after the purchase. How else could he determine that the warranty case has occurred? Warranties are thus largely useless in relation to credence qualities, as the consumer cannot check for the fulfillment/non-fulfillment of a promise. As an example for such a credence quality, let us consider the care with which a scientific study has been conducted. As a reader of the corresponding publication in a magazine, one is not able to determine whether it holds up to scientific quality criteria. This, then, is a credence quality of this information good. The customer must simply trust in the fulfillment of his expectations by the provider. This is why it is very important for him to find indicators that enable him to predict, with high probability, the trustworthiness of the provider, in this case the author's. From the provider's perspective, it is advisable to send signals that could not be sent by lower-quality providers (Göbel, 2002, 326). The building of a reputation as a quality provider, or test seals by independent institutions are such signals that can be used to reduce quality insecurities that cannot be elicited by the

customer. Such signal may be termed information substitutes relating to all services (Adler, 1996, 133-134). They are not meant to directly attest to the quality of a specific product, but point beyond the individual service and signal that the provider is a provider of quality.

Test seals, or seals of approval, which have already been used on the information market, are certificates of successful quality management (according to ISO 9000), e.g. for FIZ Chemie (Rüller, 2000), or collective marks, as SEC for suppliers in E-Commerce. Bock (2000) suggests the use of seals of approval to signal quality information by professional providers in order for them to distinguish themselves from the tons of unchecked, free content offers available online.

The use of such signals not only affects insecurities regarding credence qualities, but always also reduces insecurities about experience and search qualities. Adler here speaks of downward compatibility (1996, 135), where the higher-ranking strategies for reducing information asymmetries always additionally assume functions of the lower-ranking qualities.

Let us go back to the example of the article: if the author publishes it in a journal which is renowned for its tough review process, he thus sends a signal about the quality of his work and the potential reader—trusting in this—will not undertake any further examination of this aspect. At the same time, this information substitute relating to all services serves as a signal that certain experience qualities will also be of the same quality. The reader will assume, e.g. due to the magazine's reputation, that only a certain kind of contribution, a specific style of citation or a particular layout of the individual article is to be expected. He can save himself the effort of pre-inspecting these traits, and he does not have to fear that his expectations will be disappointed, i.e. that he will have a bad experience. Hence if the information substitutes relating to all services are mighty, the provider can, partly or in whole, forego lower-ranking signals.

The central information substitute relating to all services is the provider's **reputation**.

Information-economically speaking, reputation can be understood as a stock of past information containing the entirety of experiences connected to the brand name, such as advertising campaigns and themes, product successes and failures, quality experiences etc. (Irmscher, 1997, 193).

Brand names in particular play a very important role in order to gain a reputation online. Barwise et al. (2002, 543) detect a growing importance of brand names on the internet, because

trusted brands may be even more important in a world of information overload, and money-rich, time-poor consumers, where product quality still cannot usually be reliably judged online.

Degeratu et al. (2000) here show that the less product information is available, the greater the brand name's value is in e-commerce. In markets with pronounced information asymmetries, the brand represents a great value, which is strongly linked to the company's economic success. Companies that already have a good reputation, acquired on other ("offline") markets, are in the advantage here, as they can transfer these to the new market. But here too, the transferred reputation can only be sustained if the quality of the services is accepted by the customers. Generally, the companies that are successful on the internet are the ones who invest in their reputation, as is the case with Yahoo!, for example (Choi et al., 1997, 240 et seq.).

We had already seen above that the reputation is a prerequisite for the effectiveness of certain signals, such as the price. Great trust in the provider then translates to great trust in his price information. However, reputation can also be regarded as a direct signal for high product quality.

When product attributes are difficult to observe prior to purchase, consumers may plausibly use the quality of products produced by the firm in the past as an indicator of present or future quality (Shapiro, 1983, 659).

From this point of view, brand-loyal consumers base their quality assessment less on the price than on the brand. The reputation can thus work in both directions (Völckner, 2006, 479). In the following, we will take a closer look at the effects of reputation as an independent signal for the perception of quality.

A good reputation signals trustworthiness. The provider wants to make it clear that he will not behave in an opportunistic manner and instead prove himself worthy of the trust put in him. If he is able to implement a price premium for his quality offer, it will in fact be of advantage for him to keep the quality high in the long term instead of maximizing his profits in the short run by reducing quality (Shapiro, 1983, 660). For the customers, the reputation reduces the quality risk.

By foregoing this strategy of quality reduction, and thus higher profits in the short term, the provider gains a reputation, which is expressed in the demanders' additional *willingness to pay* for future transactions (Adler, 1996, 126).

Brynjolfsson and Smith (2000) prove, on the example of electronic book sales, the significance of the brand name. They show that customers are willing to pay a premium if the provider is well known. Conversely, this means that customers will buy a product with the same price from the provider who is best-known and has the best reputation. Providers with a lesser reputation must thus lower their prices in order to gain customers. For electronic marketplaces, it can generally be shown via several studies that the reputation has a positive correlation to both price and profits and leads to a greater price diversification (Stahl, 2005, 254, 293-294). For

e-trade with digital contents specifically, Stahl (2005, 267-268) demonstrates empirically that investments in the reputation have a disproportionate effect on the amount of selling transactions, on the profits and on the number of customers per day. The reputation (measured by the number of referencing weblinks), it was additionally shown, also has a positive, if weaker, correlation with customer loyalty (measured by the provider's share of "loyal" customers). In the end, the reputation is also a driver for the creation of network effects, as it is a suitable strategy for positively influencing the customer's product perception.

In order to reach critical mass, the *subjective perception* of the product's advantages is the decisive factors for potential users (Rogers, 2003, following Picot et al., 2003, 365).

Trust in the provider is the central requirement for buying goods with credence qualities (Göbel, 2002, 329). Without trust, the customer will not be moved to buy, as he will never be able to assess the product quality for himself. However, trust also plays an important role for a good's experience qualities. Here, too, the customer must find the (initial) trust to let himself make the purchase. He must trust in his expectations not to be disappointed by post-purchase experiences. Yoon et al. (1993) demonstrate, on the example of business insurances, that the customer's assessment of different insurance offers absolutely depends upon the provider's reputation. The providers' information offers are thus judged to be less important. They summarize (Yoon et al., 1993, 225)

...that insurance is an experience or credence good—buyers' evaluation of an insurance program greatly depends on company reputation because program information is either not persuasive or credible in influencing behavior.

#### 22.3.4 *Strategies for Building Reputation*

The reputation represents a strategic competitive factor of towering importance on information markets (Klodt, 2001, 43). There are several approaches to building reputation (Stahl, 2005, 291 et seq.). Establishing a brand name is the most prevalent and effective of these methods of building a good reputation for oneself as a provider or one's products.

Investing in brand and reputation is standard practice in the information biz, from the MGM Lion to the Time magazine logo. This investment is warranted because of the experience good problem of information (Varian, 1998, 5).



Different studies prove the significance of reputation and brand names in e-trade. The significance of reputation was analyzed multiple times in the context of online auctions. On the example of eBay, it has been shown several times (Luo & Chung, 2002; Melnik & Alm, 2002) that sellers with a good rating, i.e. a high reputation, get higher bids and price premiums for their offers. The sellers' reputation correlates positively with the buyers' willingness to pay.

Malaga and Werts (2000, following Stahl, 2005, 253) compare different reputation mechanisms in online trading, such as sellers' warranties, product sales via third parties or brand effectiveness. Brand names, they find, are the most effective variant of gaining a reputation with buyers on the internet.

One's own reputation can also be strengthened by reputation transfers. Apart from the options they have themselves, e.g. between different business fields or between the online and offline worlds, providers can profit from third parties' reputations. A traditional path is via the quality assessments, addressed above, of their own products. If such reviews stem from recognized experts or famous personalities, a reputation transfer takes place. This form of transfer is cultivated intensively in the media and entertainment industry. There are often reviews of films, books or music that are disseminated by the provider as product assessments. The same goes for the review of scientific articles. The publisher vouches for the quality of the offer with his good name.

A special role in the building of reputation is played by institutions, who secure the quality of services and, particularly, information (Zerdick et al., 2001, 42). Warranties, as we have seen, contribute little to signaling the excellence of credence qualities, since the buyer cannot check the fulfilment of the services promised. Here signals must be used that cannot be transmitted by opportunistic providers. **Certification marks and quality standards** are such information substitutes relating to all services that are used for credence qualities. According to Bock (2000, 145), certification marks are

...means of tagging products according to their make.

For instance, if food carries a Bio seal of the EU, or is certified as a product from an ecological growers' association such as Bioland, the consumer knows that an independent third party has checked the preparation and thus confirmed the credence qualities. This trust-confirming function can be assumed by seals of quality, testing centers or other trust centers (Zerdick et al., 2001, 42). In Germany, the Deutsche Institut für Gütesicherung und Kennzeichnung e. V. (formerly Reichsausschuss für Lieferbedingungen–RAL) as well as the Technische Überwachungs-Verein (TÜV) play an important role for the allocation of certification marks. The decisive factor is that the certification marks themselves are viewed as trustworthy. Here the independence and reputation of the certifying body is the decisive factor.

Certification marks can counteract the risk of diminishing average product quality. This increases providers' interest in their usage, as quality-relevant infor-

mation becomes more redeemable this way. This is particularly the case if these marks are themselves trademarks and thus represent concrete content statements (Bock, 258 et seq., 303 et seq.). They are of particular significance on the digital online information market, as there are no information carriers and, often, no price (free offers, Follow-the-free) that provides consumers with a basis of their quality assessment.

The same statements hold for the use of quality standards, generally defined as guidelines for the design of products and services (Kleinaltenkamp, 1994, 198). For uninformed consumers, quality standards represent indicators for the quality of the products and services on offer. For informed customers, on the other hand, they provide options for quality assessment, as activities that would otherwise have stayed hidden can now be made visible and verifiable (Fließ, 2004, 40). The most important and best-known standards are the quality management systems of the ISO 9000 series of standards and of the European Foundation for Quality Management (EFQM).

As opposed to warranties, in which the provider only incurs costs in case of their utilization, the use of certification marks or quality standards costs money in every case. Kirmani and Rao (2000, 69) here distinguish between “Default-Independent” and “Default-Contingent Signals”. The former, e.g. ads, brand building or low introductory prices, lead to expenses that are independent of any possible misperformance (Default-Independent). Signals such as the setting of price premiums and the granting of warranties only lead to costs if the provider cannot keep his service promise (Default-Contingent). The provider should select his signaling strategy depending on how easily the market can be segmented and how quickly after the purchase the product quality reveals itself (Kirmani & Rao, 2000, 73-74). In the case of certification marks and quality standards, this means the provider must check whether he can use established signals or may seek to build special standards.

Less expensive than the use of certification marks or quality standards and more broadly laid out is the product’s **review by online communities**. Here the provider will not profit from individual famous persons; instead, the reputation is strengthened if a multitude of voices comment positively on the provider and his services. In this form of reputation transfer, however, the company largely cedes control of how the results will pan out. If reviews are individually commissioned, the results can indeed be influenced. Positive comments can be pointedly elicited and communicated outward. The more independent the writing of reviews or the collection and publication of customers’ opinions, though, the less the provider can prevent critical comments or even a complete hatchet job.

The reputation can also be enhanced by **links**, i.e. having other high-quality providers reference one’s own offer. The positive assessment of a website’s quality is transferred to the website it links to (Stahl, 2005, 255).

As we have seen, companies can choose from a multitude of options for signaling the quality they offer. They can start with any kind of information asymmetry that may occur in relation to the quality of a product or a service: search, experience and credence qualities. Signals that are used to reduce information asymme-

tries in credence qualities (performance-related information substitutes) also mitigate search-related quality insecurities. The same goes for signals to reduce quality insecurities that result from experience qualities (information substitutes relating to all services); they complementarily cover experience- and search-related insecurities. In Figure 22.2, the mentioned signaling instruments are displayed according to their rank.

<b>Credence Qualities</b>			Information substitutes relating to all services (e.g. reputation/brand, certification marks, quality standards)
<b>Experience Qualities</b>		Performance related information substitutes (e.g. reviews, warranties)	↓
<b>Search Qualities</b>	Performance related information search (inspection offers) (e.g. previewing abstracts)	↓	↓

Figure 22.2: Spectrum of Action of Individual Instruments to Reduce Quality-Related Information Asymmetries. Source: Following Adler, 1996, 135.

### 22.4 Signals in Strategic Market Communication

The reduction of quality-related information asymmetries has so far been represented as a communication process between company and customer. Signals should convince potential buyers that the services offers correspond with the expected quality. However, signaling also plays an important role in the strategic context, as we noted at the beginning of this chapter. Monroe (2003, 89) speaks of competitive signals meant to influence the market in general:

In essence, a competitive signal is a marketing activity that reveals insights into the unobservable motives for the seller’s behavior or intended behavior. Such a signal alerts others about the product quality, reputation, business intentions, previews of potential actions, or even forecasts concerning the expected business conditions in the market.

In the context of strategic market communication, then, not only the quality signals discussed above are to be considered in their strategic dimension, but also those signals that are directed at other market players besides the customers.

For information goods as network effect goods in particular signals play a crucial role in surmounting critical mass up until the occurrence of network effects, creating a standard or, later, securing the provider's market position. The expectations of all market players are a central factor here. Katz and Shapiro (1985) formulate, from the customer's perspective:

If consumers expect a seller to be dominant, then consumers will be willing to pay more for the firm's product, and it will, in fact, be dominant.

The company's goal is thus to influence the market participants' expectations in its favor. In the competition for reaching critical mass, and—going further—establishing compatibility standards, there is a whole line of signals that can be used to further one's success: product announcements (Farrell & Saloner, 1986; Shapiro & Varian, 1999a, 14), entering commitments as well as partnership or alliance announcements (Lilly & Walters, 1997), insurance offers (Dybvig & Spatt, 1983), but the direct communication of network growth in the form of sales figures, customers or market share can also play an important role here.

Whatever signals are sent, they must be credible in order to work.

The receiver's assessment of the signal's credibility is influenced by the sender's reputation and the signal's potential reversibility (Monroe, 2003, 90).

The signaler's reputation again plays a crucial role. How reliable have past signals, e.g. concerning product or service quality, been? Have the promises been kept? After all, if the company has fulfilled the self-defined expectations of its services in the past, current signals are also to be deemed credible. The degree of signals' reversibility works in the same direction. Are they easily changeable, as for example the purely communicative announcement of an intended cooperation, or do they involve high (material or immaterial) costs? The latter scenario would be the case if the cooperation is contractually agreed upon, involves great communicative efforts and initial investments in joint manufacturing plants have already been made. A last-minute change would incur significant expenses. Such signals, based on observable behavior, are a lot more convincing and credible than those that are merely mentioned verbally (Monroe, 2003, 90). In the following, we will introduce the most important forms of signaling in the context of strategic market communication.

#### *22.4.1 Product Announcements*

Product announcements are of great significance in innovation management (Lilly & Walters, 1997), and also play a big role in connection with standardization processes (Maab, 2006, 134 et seq., Shapiro & Varian, 1999b). Some examples: Bill

Gates officially announced the new X-Box in March of 2000, even though it was slated to enter the market in the fall of 2001. Sony announced its PlayStation 2 twelve months before its market debut in Japan (Le Nagard-Assayag & Manceau, 2001, 204). Interestingly, this announcement took place exactly one week after Sega brought its new 128-bit Dreamcast console on the market. Other companies, such as Symbian, pursue a different strategy and avoid the creation of marketing hypes well in advance of the product launch (Suarez, 2004, 277).

A product announcement is

a formal, deliberate communication before a firm actually undertakes a particular marketing action such as a price change, a new advertising campaign, or a product line change (Eliashberg & Robertson, 1988, 282).

Announcements comprise a description of the offer's features, possibly some price information as well as the probable launch date. For network goods in particular, their expected prevalence and compatibility with competing products are further typical information communicated as part of a product announcements (Köster, 1999, 21).

Announcing a product has several effects, which are differentiated according to who the announcement is aimed at.

Announcements that are primarily addressed to the **consumer** are designed to stir up curiosity and may further lead to the customers postponing their purchasing decision until the new product is available (Farrell & Saloner, 1986; Lilly & Walters, 1997). The announcement alerts them to the product earlier than an advertising campaign immediately prior to its launch would have done. Information concerning product qualities can be disseminated in the run-up and the press as well as other opinion leaders, e.g. on the internet, can comment or—if trial versions are available already—assess the product performance. The consumers can use the early information to plan their expenses in the long term, as well as minimize or distribute over a longer period any switching costs that may apply. It can be shown empirically that products involving high switching costs are regularly announced well before their launch. Announcements are also made more frequently (albeit with no statistical significance) if the new product involves high learning costs for the customer (Eliashberg & Robertson, 1988, 290-291).

The effectiveness of announcements heavily depends upon their timing. Well-timed product announcements can move up the product launch date. It would be of disadvantage, however, if as a consequence of the announcement sales of one's own predecessor product diminish, i.e. if cannibalization occurs. This danger is also referred to as the "Osborne Effect" (Besen & Farrel, 1994, 124). In the 1980s, the Osborne Computer Corporation had to file for bankruptcy due to the market launch of an already announced follow-up model to one of their computers being delayed by a year (Osborne & Dvorak, 1984).

Important influencing factors for a good timing of product announcements are the customers' buying frequency as well as learning and switching costs. Kohli (1999) demonstrates this empirically on the example of hardware and software. Badly timed—too early or too late—announcements cannot produce the desired effects. Late announcements are too close to the market launch, so they cannot create any strong effects anymore. They are then less announcements than early introductory advertising. Early announcements are also ineffective, as the announced product is then merely hot air, or “vaporware”, i.e. products that are not available at the promised time (Bayus et al., 2001, 3). If insufficient information about the product is available, they fizzle out without effect (Kohli, 1999, 46).

Software companies often announce their products very early, in order to slow down the competition's sales and make customers aware of their own product.

For example, Microsoft first announced that Windows NT 5.0® would be released in 1998 and then delayed its release of the product so long that it renamed its product Windows 2000®. Competitors accused Microsoft of using vapourware tactics (Gans, 2008).

Bayus et al., (2001, 6) show that only around 50% of 123 software products announced between 1986 and 1995 actually entered the market within three months of the announcement being made. More than 20% of the products were even only available more than nine months after. The popular portal Wired releases a yearly list of the top ten vaporware products, in which hardware, software and video game offers occupy the top spots (Calore, 2008). 3D Realm's Duke Nukem Forever enjoys the epithet “King of Vaporware” due to its endless delays since 1998. Despite the flowing borders between an unintended delay in delivery and an intentionally early announcement, the customers' ire can cause lasting damage to a company's reputation as a reliable provider. Microsoft, for example, had to shoulder a decline in prices of 5.3% in late 1997 after it became clear that Windows 98 would not be available in the first quarter of 1998, as announced, but only in the second (Shapiro & Varian, 1999a, 275). With regard to its announcements, a company's reputation is also very important in this context. Companies that have a reputation to lose will refrain from making false announcements (Choi et al., 2006, 222).

Early announcements of new products can cause significant damage to not only the individual company, but also to an entire industry, if overall credibility is lost. Intentionally false announcements have thus been subject to prosecution in the USA recently (Bayus et al., 2001, 4 et seq.). In reaction to this, the Software and Information Industry Association has assessed the intentional misannouncement of products as detrimental in their eight principles of competition (Software & Information Industry Association, 2008).

Announcements can further aim in the direction of the **complementors**. They are thus made aware of new products and their planned market introduction and

can develop appropriate complementary products at an early stage. If announcements are meant to be directed at complementors, they will typically not be released as press statements; the information tends to be confidentially passed on prior to the announcement, or be announced at a special event. Thus the X-Box was announced and demonstrated by Bill Gates at an annual meeting of game manufacturers. In the gaming industry, such announcements typically entail providing the manufacturers with development tools in order for a sufficient amount of compatible games to be available for the product launch (Le Nagard-Assayag & Manceau, 2001, 207). The announcements are meant to make complementors develop more complementary products for a basic goods than they would without this communication method.

Announcements are of particular importance if they involve network effect products. This explains why announcements are a widely used strategy in the information good industry (Choi et al., 2006, 208).

Managing (customer) expectations plays a crucial role for network effect products in particular (Shapiro & Varian, 1999a, 275). Companies have a vested interest in customers not merely expecting that the product will have a strong basic value for them, but that many others will also buy it, thus raising its network effect value.

When network effects exist, the strategic reason for preannouncing is to gain a faster takeoff by managing consumers' expectations (Lee & O'Connor, 2003, 251).

Announcements represent a kind of psychological positioning strategy, which serves to convince customers that the new product will become the standard (Arthur, 1996).

According to a survey of experts from the music industry (Le Nagard-Assayag & Manceau, 2001, 209), a good's installed base is the most important factor for complementors' decision to manufacture compatible products. Complementors thus observe very precisely how the consumers assess these product announcements. They read journalists' comments and heed the recommendations made by retailers, market experts or even the potential buyers themselves. The internet's role in these processes is becoming increasingly important. The end consumer can make himself be heard very clearly and influences buying processes. Many Early Adopters are also internet users who glean their information from the Web. This played a huge role in the decision between the formats DVD and DivX. Dranove and Gandall (2003, 385 et seq.) found out that the information available on the internet was surprisingly accurate and that the unfavorable perspectives of DivX as a competing technology for DVD had been very well anticipated.

Le Nagard-Assayag and Manceau (2001) observed, on the basis of a model, what interdependencies there were between the expectations of consumers and those of complementors, and how product announcements affected the short- and long-term success of a network effect good. They make it clear that apart from di-

rect network effects, indirect ones also play an important role. They demonstrate, on the example of hardware and software, that quick prevalence can best be achieved if both consumers (direct network effects) and complementors (indirect network effects) nurture great expectations concerning the product's success well ahead of its market launch.

Microsoft, for instance, announces its new operating systems to program providers several years in advance in order to stimulate the design of software programs. A few months later, the firm makes a public pre-announcement at opinion leaders and potential customers to build favourable expectations about the forthcoming product (Le Nagard-Assayag & Manceau, 2001, 216).

They recommend placing a high priority on customer expectations, as these are the decisive factor for overall success. The complementors' expectations can effect different things. In the most favorable scenario, they are highly positive, in which case it is to be expected that the product will be a success in the short and in the long term. If the complementors' expectations are highly negative, this will impair short-term success, as fewer complementary offers will be available, which will be compensated for, however, once the complementors realize their misestimation and hurry to bring many offers onto the market. The worst-case scenario is a medium expectation of the product's success. In that case, the market will be steadily supplied with an average amount of complements and indirect network effects will be rather weak. Le Nagard-Assayag and Manceau (2003, 216-217) recommend orienting one's announcement strategy on how well complementors can be influenced. If it has to be assumed that no really high expectations can be created, one should instead focus only on the consumers and ignore the complementors' demurrals. Nevertheless, the complementors should not be completely forsaken. Of course they have to be provided with the necessary technological product information and the estimated market potential should also be announced. Additionally, the necessary lead time for product development should be made allowance for, so that complements will actually be available in time for the market launch.

Product announcements of network effect products work not only in the direction of the customers and complementors, but also have a large significance for the expectations of the **competitors**. They should, where possible, be prevented from entering the market in question. Such communication-induced market entry barriers can only be created, though, if the announcement does not stimulate but discourages competition. Eliashberg and Chatterjee (1985) derive, from different models, that the market leader will act more aggressively (e.g. via more ads) if he expects that the competitors' reaction will be weak or come with heavy delays and no clear direction.



There are thus correlations between the different groupings of addressees of product announcements, specifically consumers and competitors, which companies must take into account in their communication:

A firm's decision of whether or not to preannounce a new product often results from a trade-off between the anticipation of increased future sales of the new product and the negative consequences related to freezing purchases, cannibalizing former products and stimulating competitive reactions (Le Nagard-Assayag & Manceau, 2001, 206).

Product announcements influence competitors' assessments regarding the chances for the swift building of an installed base:

Under increasing returns, rivals will back off in a market not only if it is locked in but if they *believe* it will be locked in by someone else (Arthur, 1996, 107).

If network effects are at play, however, product announcements can be used strategically not only by the first mover, but also by a second, to achieve success in spite of the temporal disadvantage. Farrell and Saloner (1986) demonstrate this on a mathematical model. They refer to the switch from an existing technology to a new, incompatible one. Announcements by a market follower can obstruct the innovator's building of an installed base, or even prevent it.

The timing of the announcement of a new incompatible product can critically determine whether the new product supersedes the existing technology (Farrell & Saloner, 1986, 942).

In this case, there are users who will, due to the announcement, not buy the already available product but wait for the new one and thus contribute—after its market entry—to that latter's increased building up of an installed base. This could be clearly observed in the introduction of DivX as a competing format for the DVD. The DivX announcement led to a decline in the adoption rate of DVD technology. This effect, however, only caused temporary market insecurity. DivX was found out very soon as an early product announcement, and neither was there any commitment on the part of the film industry to provide the necessary complementary content (Dranove & Gandal, 2003). In the end, DivX was not able to assert itself as the standard.

Following the same principle, then, a company can also protect its own, already established technology from a new competitor's market entry, of course, by announcing a follow-up technology, product enhancements or, as is common practice in the software industry, updates or upgrades.

Lemley and McGowan (1998, 505) detect even farther-reaching effects of product announcements, namely with regard to the creation of a standard:

By preannouncing a product, a large company may therefore influence the outcome of a standards competition in an industry characterized by network effects.

Announcements thus play an important role in the question of whether a (competing) product reaches critical mass and whether network effects come into play. They are an important strategic instrument of communication, bearing opportunities as well as risks.

#### *22.4.2 Commitment*

Another way of sending strategic signals is via commitment, also called bonding (Göbel, 2002, 328). If companies assume certain externally visible obligations, e.g. by investing heavily in production facilities, this strategic commitment is meant to show which path they have chosen. Opportunistic behavior—i.e. doing something other than what was signaled—will profit them nothing after this. In the establishment of standards in particular, investing in large production facilities sends a signal for the lasting production of the new goods and the willingness for establishing a new standard. Investment announcements are particularly popular in cases where companies do not yet have the kind of reputation that could be damaged by opportunistic behavior. This was the case for Grundig, who announced the construction of large production facilities during the standardization competition for video recorder systems at the end of the 1970s in order to demonstrate their determination to establish Video 2000 as the standard. In view of the market potential at the time, it was clear that the volume which had been planned could only be sold if a dominant market position was attained (Heß, 1993, 65-66). Philips acted similarly during the establishment of the CD as the standard succeeding LPs (McGahan, 1991).

Another strategic signal in the form of commitment is when companies have committed customers and want to show the competition that, after a period of price competition, they now want to proceed to the phase where they milk their existing customers for all they're worth (Metge, 2008, 195). The (prohibitive) switching costs are used to exhaust one's own customers' willingnesses to pay, thus signaling the competition that the struggle for market share is coming to an end.

#### *22.4.3 Cooperations*

Potential customers' expectations can also be influenced by announcing different forms of cooperations. Innovators are always monopolists shortly after launching their new product. For potential customers, this bears the danger of monopolistic

pricing, which in turn can lead to shopping reticence. In order to make it clear that that is not the sole provider's intention, access to a technology can be opened up. In this so-called "Second Sourcing", the modes of procurement are stretched out for the buyer by enhancing the production from one to two or more competing manufacturers. Second Sourcing is defined by Farrell and Gallini (1988, 673-674) as:

Voluntary inviting competitors into the market, usually by licensing a product at low royalties or by using an "open architecture". This involves giving away part of the market, so it is not obvious that it will be profitable.

This opening up creates infra-technological competition, which makes it impossible for the individual company to artificially reduce its offer and set monopolistic prices. Furthermore, opening up access is a signal to providers of complementary products, for whom the security that sufficient basic offers will be made—even in case of the innovator's insolvency—is increased. This lowers the investment risk for the production of complements (Ehrhardt, 2001, 121-122). IBM is the classical example for the offer of an open system. IBM encouraged independent software providers to write IBM-compatible software in order to have sufficient complements available in time for market launch (Katz & Shapiro, 1994, 103).

The extent of opening up can reach from exclusive deals between only two companies up to large networks. Cooperation with big-name partners positively influences the expectations of the other market players.

The most direct way to manage expectations is by assembling allies and making grand claims about your product's current or future popularity (Shapiro & Varian, 1999a, 275).

Prestigious companies often assume the role of opinion leaders. They are assumed to have large expertise and the ability of making a well-founded judgment on new products and technologies. Winning them as cooperation partners is thus extremely valuable. Sun Microsystems chose such a path, for example, by placing full-page ads in 1999, naming all the famous partners in their JAVA coalition (Shapiro & Varian, 1999a, 275-276). Likewise, the struggle for the follow-up standard to DVD was fought by building alliances and winning the big names of the participating industries.

In this sort of invitation to market entry (Second Sourcing), the monopolistic innovator (as was elaborated in detail above, in the chapter on Compatibility Management and Standardization) must weigh two effects against each other: the competitive effect and the network effect (Economides, 1996b, Ch. 4.1). The competitive effect means a decline of market share and a tendency toward decreasing prices and profits due to the increasing number of competitors. The (direct) network effects, on the other hand, cause an increasing willingness to pay

and rising prices due to the high number of expected sales. If the network effects are strong enough, they will overcompensate for the disadvantages stemming from the increased intensity of competition (Economides, 1996a, 231). The network will grow much more strongly with competition than it would if the innovator were to go it alone. The same goes for the complements: their sales will also increase in line with the basic good's. If the original monopolist additionally offers complements, he will be able to profit from the network effects twofold.

#### 22.4.4 *Communicating the Network Growth*

It is important, and thus has to be stressed once more, that the network effects are due not merely to the actual number of participants and availability of complements, but also to the expected size of the network and of the corresponding complementary offer in the planned period of participation (Katz & Shapiro, 1994). Thus it can come to a self-fulfilling prophecy, as the system which is expected to succeed will, in all probability, go on to do so (Picot & Scheuble, 2000, 251). Particularly if the market is in an unstable equilibrium (Linde, 2008, 125 et seq.), it can be the customers' expectations on their own that lead to a mushrooming of demand, up to a stable equilibrium, and thus decide whether a product succeeds or fails (Wiese, 1991, 46). This also makes it clear how important it is to continually keep communicating the status of network growth until success is confirmed. Apple practiced this to excess when launching iTunes in May 2003. In the following months, up to December, Apple released ten press statements meant to signal the success of the music service (Apple, 2003). How this can lead to an interplay of self-strengthening effects is clearly observable on the example of VHS video recorders (Dietl & Royer, 2000, 326). The growing offer of VHS recorders led to a growing offers of films in the corresponding format. The growing offer of films in turn led to increased demand for recorders. This lowered unit costs for both the hardware and complement providers, which facilitated price reductions and thus increased demand further. Additionally, the offer of the most diverse complements (recording devices for home videos, devices for programming the recorders etc.) increased, further strengthening the positive feedback.

#### 22.4.5 *Insurance Offers*

A somewhat more specific signaling problem arises for the market launch of a network effect good. As long as critical mass is not reached, the provider faces the danger of setbacks if demand is not increased via direct and indirect network effects but customers instead decide to wait. In this penguin phase, early adopters will already be among the buyers, but the broad masses, who have a vested interest in the product's prevalence due to the network effects, are not yet ready to buy. They are insecure as to whether the product or the technology will in fact assert itself. A highly innovative solution, capable of solving the starting problem securely and free of charge is the insurance solution by Dybvig and Spatt (1983). They suggest giving every potential buyer of a network effect good insurance. Everyone

who now decides to buy no longer has to run the risk of the desired network effects failing to establish themselves to an insufficient amount of other users. If that were the case, the insurance would come into effect and provide compensation. As the insurance largely reduces the insecurity, though, encouraging many consumers to buy the product, it will only be used minimally. Dybvig and Spatt regard the national government as the provider of such an insurance (1983, 238 et seq.), but the producer of a network effect good himself can also make such an offer (Wiese, 1991, 47). The problem of customer insecurity is transferred to the provider via this solution. As long as he is entirely certain of market success, the offering of insurance is in fact free—outside of the transaction costs for effecting and disseminating it. On the other hand, if demand does not grow as expected, the provider can incur significant expenses.

#### 22.4.6 *Limit-Pricing*

Signaling also plays a large role during market entry, if the provider's goal is to keep the competition at arm's length. Low (penetration) prices set by the first mover send a clear signal that the market is unattractive for the follower(s). "Limit-Price" specifically designates the highest possible price that will still prevent the competition from entering the market (Wied-Nebbeling, 1994, 202 et seq.). Due to the existing information asymmetries between the first mover and his competitors, the followers are unable to accurately assess what the reasons for the pricing are (Wied-Nebbeling, 2004, 253 et seq.). Does the first mover have such a large pricing latitude due to low unit costs, or does he estimate demand to be so low that it can only be exploited via very low prices? Neither reason is an incentive for entering the market as follower and risk failing to reach one's minimum optimal company size.

Signaling, as was demonstrated, is a mighty but multivalent instrument. There is a multitude of available signaling options for influencing the various different stakeholders (customers, suppliers, complementors, competitors). As single signals can achieve different effects at the same time, though, good planning and careful coordination are imperative.

## **22.5 Conclusion**

Only available in the printed version.

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