Dimensions of Intangible Goods

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Abstract

Despite the ever-growing importance of intangible goods in today’s economy, little is known about the underlying structural characteristics of intangible goods. This article will address this issue by analyzing some of the dimensions in which one intangible good can differ from another. Several dimensions are identified and they are grouped into three categories: buyer dimensions, seller dimensions and dimensions of the delivery process. These perspectives can be further subdivided into twelve different dimensions in total. This leads to a framework for analyzing intangible goods along the following dimensions: value determination, perishability, recipient, complexity of product use, externalities, specifiability, customizability, substitutability, intensity in use, existence of a tangible equivalent, transfer mode and the options for tangible support.

1. Introduction

The world economy is shifting more and more away from tangible, physical goods and towards the intangible ([3], [5], [6]). Although this shift has been going for several decades ([8], [14]), the phenomenal increase in the use of information and communication technology over the past years has accelerated this shift and made it clearly visible. The rise of the Internet has created a global market for many products and services and companies are adapting their business processes to take advantage of the possibilities that electronic commerce offers.

A lot of attention in electronic commerce is being paid to online merchants like Amazon.com and Dell that are selling tangible products such as books and computers respectively. Although these two cases are by all accounts textbook examples of the potential that electronic commerce has, the sale of intangible goods online is a (potentially) much bigger market (Wyckoff 1997). There is an intuitive logic behind this, based on the fact that an intangible product cannot be inspected physically. This means that the traditional way of doing business has no advantage over doing business electronically in this respect. The consequence is that shifting from doing business offline to doing business online is a much smaller jump for intangible goods than for tangible goods. Therefore we can expect online trading in intangible goods to become one of the focal points of electronic commerce.

Unfortunately we are still a long way from fully understanding the business models that may underlie such an online venture as we have only just begun to recognize the potential of intangible goods. Before we can analyze trading strategies, we need to have a clear picture of what it is we are trading. That is where this article will offer a contribution by outlining several dimensions along which various intangible goods may differ. These dimensions could then subsequently be used to formulate and analyze trading strategies for subcategories in this classification matrix.

The remainder of this article is as follows: section 2 will review the existing literature on intangible goods, emphasizing the need for a classification scheme. The literature yields several dimensions for such a scheme. Using a very stylized model of a transaction involving three aspects (buyer, seller and delivery process), these dimensions can—together with some additional new ones—be grouped in the three categories mentioned. This model is presented in section 3. Sections 4, 5 and 6 describe the dimensions in more detail, each section a different category, buyer-related dimensions, seller-related dimensions and dimensions related to the delivery process respectively. The article ends with conclusions and suggestions for further research.
2. Literature review

Despite the growing importance of intangible goods, as outlined in the introduction, research into this area is rather limited so far. The majority of the handful of research articles that have been written on this topic focused on intangible goods as a general category. Attention was paid mainly to the aspects that intangible goods in general differentiate from tangible goods. For instance Meyer and Zack [11] analyzed two information product companies. They focused on the design and development process for information products and how this is different from more traditional design and development. They did not pay much attention to characteristics of the information products themselves.

Goldfinger [6] provides an integrative picture of the intangible economy and makes a strong case for developing new ways of dealing with aspects of the intangible economy. However, he also analyzes intangible goods more from their common characteristics than from what distinguishes one intangible good from another. While this is certainly a useful line of analysis, it does not do justice to the highly varied nature of intangible goods. Research is needed that looks within the category of intangible goods itself and identifies similarities and differences between one intangible good and another. A little bit of work has been done in this particular area.

Peterson, Balasubramanian and Bronnenberg [13] look at the general category of products sold over the Internet and they provide a broad classification scheme for these products. However, such products are not the same as intangible goods, as the simple example of a computer shows. Moreover, their focus is directed towards the impact that the Internet has on consumer marketing, so they do not go deeply into the issues related to the products themselves.

Choi, Stahl and Whinston [2] investigate issues related to digital products, which can be considered a subclass of intangible products (more on this below). They provide a classification scheme of digital products, based on the following five dimensions:

- transfer mode
- timeliness
- intensity in use
- operational usage and
- externalities

Although this scheme offers useful insights, we feel that it does not fully capture all essential aspects of intangible goods and the aspect of operational usage does not seem to add much to the scheme. We will explain these dimensions in more detail later on, as will use them as a starting point for the framework developed in this article.

In addition to this, in the field of marketing there is a huge body of literature on services marketing (which we will only very selectively review here) that touches on related areas. For instance Lovelock [9] and Boyt and Harvey [1] provide classification schemes of services. However, intangible goods are not necessarily services, as examples of network bandwidth, stock quotes or webpages show. Neither can all services be delivered as intangible goods, for instance a haircut. Still, some of the aspects that are relevant for services are also relevant for intangible goods. We will draw on the articles mentioned for additional dimensions.

What are intangible goods then? As the examples in the previous paragraphs and additional examples such as brand names, music, patents and financial instruments show, the nature of intangible goods is quite varied, with the only thing in common being their intangibility. A clear, brief definition is difficult to give. Therefore, rather than attempt to capture all the various aspects in one long and cumbersome definition, we will simply stick with the literal meaning of the term “intangible goods”. We will not define them any further than that, only perhaps augmented with the colloquial definition of “being a product that you can drop on your foot without feeling it”.

Terms such as digital products or information goods have similar connotations, except that they emphasize certain possible aspects of intangible goods. Since an intangible good is not necessarily digitizable (example: brand name) nor an information good (example: bandwidth), we will stick with the broader and more neutral terminology of intangible goods.

3. The model

As was mentioned several times in the literature review, little attention has been paid to the underlying characteristics of intangible goods. What differentiates one intangible good from another? By answering that question we can hope to get a step closer to understanding the complexities of trading intangible goods.

This article will present a framework for analyzing intangible goods along several dimensions by using a very stylized model of a transaction presented in figure 1. There are three elements to the model: the buyer, the seller and the delivery process by which the good goes from seller to buyer.

There certainly are more accurate models of a transaction, but modeling a transaction as accurately as possible is not our goal here. The model is merely a means to an end. The end in this case being a convenient and structured grouping of the dimensions found in the
literature plus the additional dimensions that are introduced in this article.

**Figure 1: Stylized model of a transaction.**

Each of the dimensions is grouped under one of the elements of the transaction model, depending on whether it is a dimension primarily related to the buyer, the seller or the delivery process. The dimensions are grouped as follows:

**Buyer-related dimensions:**
- value determination
- perishability
- recipient
- complexity of product use
- externalities

**Seller-related dimensions:**
- specifiability
- customizability
- substitutability
- intensity in use
- existence of a tangible equivalent

**Delivery-process-related dimensions:**
- transfer mode
- options for tangible support

In general, the buyer-related dimensions deal with the value of the intangible good to the consumer and the use of that good, the seller-related dimensions deal with the production and presentation of the good and the dimensions related to the delivery process deal with how to get the good from seller to buyer.

This grouping of the various dimensions is admittedly a bit arbitrary in some cases and it should therefore by no means be interpreted as fixed as it may appear here. For instance one could argue that complexity of product use is as much a seller’s issue (who wants to reduce this complexity as much as possible) as it is a buyer’s issue (who needs to use the good in question). However, the purpose of the threefold categorization introduced here is merely to have a logical structure behind the dimensions introduced. Whether or not other categorizations of these dimensions are possible is a valid discussion in principle, but the only consequence for the dimensions would be a reshuffling among the categories. Hence it is not relevant for the main thrust of this article, being the identification of the dimensions.

We will now analyze each of the dimensions in more detail.

### 4. Buyer-related dimensions

The core of every good is the use it has for its buyer, the need it can satisfy, in other words its potential or perceived value. This immediately leads to such questions as: what is the value of this good, how to determine this value and how do I use the good to extract this value? The first two questions introduce the dimensions of perishability, externalities and value determination. The third question leads to the dimensions of complexity of product use and the recipient.

**Value determination**

The first and perhaps most important aspect of intangible goods deals with the problem of determining their value. There are two issues complicating this value determination. First is the idiosyncratic nature of intangible goods, for example in the case of a patent, which makes it hard to determine the value based on the value of similar goods. Second is the totally different economics of production for intangible goods that can be digitized, since in that case the costs of reproduction are negligible and therefore value determination methods based on marginal costs (may) lose their validity [2]. To address the issue of value determination, we draw upon some classical marketing literature.

Nelson [12] proposed the well-known differentiation between search and experience qualities, with search qualities being those aspects of a product that a consumer can determine beforehand (such as price) and experience qualities being those aspects that can only be determined after purchase or consumption (such as taste). Darby and Karmi [4] extended this framework with credence qualities, which are aspects a consumer cannot determine even after purchase or consumption because he lacks the necessary skill. An example of a product with high credence qualities is a medical diagnosis. Zeithaml [16] arranged search, experience and credence products along a continuum of evaluation, with search products being easiest to evaluate and credence products the hardest.

This continuum from easy to hard to evaluate, with its distinction in search, experience, and credence goods provides a useful division for the value-determination-dimension. Examples of intangible goods in each of the three categories are stock quotes, a piece of music and a consultancy report.

**Perishability**
Practically every product is perishable in a way, i.e. its value decreases with time (hence perishability is referred to as time-dependence in [2]). Moreover, perishability and the consequences for the value of that good are related to the purpose it is bought for. This means that an assessment of the perishability of an intangible good has to take into account the specific use for that occasion. For example perishability of bandwidth in a network would be very high for a real-time videoconferencing application, because in such a context delays are very annoying. Yet bandwidth perishability would be much lower for sending a casual email, because in that case a delay has far less consequences. Similarly the value of a stock quote is highly perishable for a professional trader but not so much for an occasional trader.

Recipient
This dimension was introduced by Lovelock [9] in the context of services, but it applies to intangible goods as well. The question to be answered here is: who or what is the direct recipient of the intangible good? It may be directed at things or at people. Examples of the former include banking services and insurance as they operate on intangible assets. The latter category included goods directed at people’s minds, such as music and information services.

Complexity of product use
Another dimension adapted from the service marketing literature [1], this is an important dimension for assessing the potential market for a certain intangible good. Some intangible goods, for instance music, can be consumed by anyone and without any specific requirements. Other intangible goods may require long and intensive training before they can be used effectively, as is the case with certain software packages.

Externalities ([2], [7])
Positive/negative externalities of products are effects that increase/decrease average consumer value as more people have those products. Both types of externalities can occur for intangible goods. For instance a popular type of wordprocessor exhibits a positive externality due to increased compatibility with other users. A stock quote on the contrary has a negative externality, because the more people have this information, the less information asymmetry is present, which reduces the opportunities for traders to make money from this information asymmetry.

5. Seller-related dimensions
This perspective deals with aspects of intangible goods that are not directly related to their value, but instead related to their environment: how are intangible goods described, produced and used?

Specifiability
This aspect deals with the issue of value communication from seller to (potential) buyer. We will define specifiability as “how accurately can a consumer assess, before entering a transaction, whether or not the good will satisfy the purpose it is purchased for”. This is a different take on what Malone et al. [10] refer to as “complexity of product description”. They define it as the amount of information needed to specify the attributes of a product in enough detail to allow potential buyers to make a selection. They focus on the amount of information needed, whereas specifiability focuses on the judgment of the potential buyer. Reason being that the amount of information per se is not a very useful dimension: whether more or less information needed is relatively unimportant, as long as the goal of the information (i.e. accurate consumer assessment) is reached. Therefore the consumer assessment should be the unit of analysis and not the amount of information.

Specifiability is frequently related to the value determination aspect, since a search good will generally have a high specifiability and experience and credence goods generally a lower specifiability. The two are logically independent though, as an example of a software ad proves where for instance a wordprocessor (a typical experience good) is described according to all its functions, making it highly specifiable. Therefore is included as a separate dimension, ranging from high to low.

The task for any seller of intangible goods is to achieve a high specifiability in order to reduce customer uncertainty. This can be done using various approaches:
- A direct approach such as specifying the functionality of the good
- An indirect (trust-based) approach for instance by listing all the research activities that were undertaken for a scientific report
- A try-before-you-buy approach by providing demo versions of software or sample paragraphs of reports.

Customizability
This dimension measures to what extent the intangible good in question can be tailored to a specific situation (i.e. customer preferences). An example of high customizability would be a personalized online newspaper. Note that while the newspaper itself is highly customizable, the elements that it is made of, i.e. the individual news stories, are not customizable. A similar distinction can be made between a stock portfolio report and the individual stock quotes that the report is based on.
Also note that customizability can have a definite impact on the value of a good to a buyer, as a customer is likely to pay more for a personalized good. However, this effect on value is a consequence of the customizability. Customizability deals primarily with the functionality of the product and therefore we included it in this section and not the previous.

**Substitutability**

A basic aspect of every good and therefore also of intangible goods is its substitutability: to what extent can a good be substituted by a competing good with the same functionality? For moderate to high substitutability, again take the example of a personalized newspaper: assuming the individual news stories are obtained from the same public news agencies, there would be no essential difference between two sellers of personalized newspapers when they are given the same consumer preferences (although they will probably differ in the details or in the packaging). Another example of high substitutability is network bandwidth: there is generally no functional difference between one 2-megabit connection and another. High substitutability is generally not welcomed by a seller, who will try to lower this substitutability by customizing his product as much as possible.

**Intensity in use**

Choi, Stahl and Whinston [2] distinguish between single-use and multi-use, creating the intangible goods equivalent of non-durable and durable goods. A single-use intangible good might be a result from a search engine, whereas a conventional piece of software represents a multi-use intangible good.

**Existence of a tangible equivalent**

Although some intangible goods such as bandwidth are genuinely intangible, many have a tangible equivalent as well that has the same functionality. Examples include music with online streaming audio vs. CD, an airline ticket with electronic ticketing vs. conventional ticketing (both give you the same right to being transported) and a standard newspaper article with the online version vs. the printed version (assuming that arguments about ease of reading do not play a role). Essential is that the tangible equivalent has the same functionality. An example of a tangible equivalent without the same functionality is a hypertext novel: if this would be printed on paper, the basic text would be equivalent to its online counterpart, but it would lose the navigational possibilities and therefore not be equivalent. The same can be said about a personalized electronic newspaper because one can argue that, although theoretically possible, in practice a paper-based personalized newspaper could never reach the amount of flexibility that an intangible version has. Likewise, the electronic version can be printed after receiving it or it can be faxed, but then the customizing (its essential functionality) has been done by the intangible version and not the tangible.

The existence of a tangible equivalent can be a trust-generating factor for an intangible good, because it can serve as a reliable backup. It can also help to facilitate the value determination process, since the value of the tangible equivalent minus the production cost of the tangible component can serve as a rough indicator for the value of the intangible.

6. **Delivery-process-related dimensions**

Even though an intangible good is not physical, there still needs to be some sort of delivery process to get it from seller to buyer. Service marketing literature has dealt extensively with process characteristics of services (Lovelock [9] is a good starting point), but mostly from a people perspective that is not very appropriate for intangible goods. Technology is a much more appropriate delivery medium for intangible goods so we will focus on two dimensions related to technology aspects.

**Transfer mode**

Choi, Stahl and Whinston [2] make a distinction for digital products between delivered products and interactive products. Delivered products are downloaded (either push or pull) at once and after delivery there is no more need to interact, whereas interactive products require more or less continuous interaction. Although primarily aimed at digital products and not intangible goods in general, it is an important enough distinction to be made in our framework.

**Options for tangible support**

Every intangible good needs some form of tangible support [6], but they differ in the options there are for the support. Bandwidth exists solely on network cables, an airline ticket needs a computer to exist electronically or it needs paper to be printed on and it needs an airplane to have value. For software there are the options of electronic delivery (again needing a computer), delivery on diskettes and delivery on CD-ROM. The most illuminating example perhaps is a film idea, which not only generates movies, but also videos, websites, books, soundtracks, toys and even theme parks, each having a different type of tangible support [6]. Given the general ease of reproduction of intangible goods, having different options for tangible support can greatly enhance the profit-making potential of such a good.
7. Summary, conclusions and further research

As the intangible economy is only in its infancy, we cannot hope to fully understand it yet or assess its implications. Expectations about the impact of trading intangible goods online run the full spectrum of opinions. The fact that research on intangible goods has been very limited so far only goes to show that we are at the beginning of what could possibly be a whole new form of commerce. Both companies and researchers are struggling to come to terms with strategies and business models for trading in intangible goods. Do the tried-and-tested strategies still work and if so, in which cases? Do the strategies need to be modified? Or do we need entirely new ones? These are key questions that have to be answered.

If we do not know what it actually is we are trading, what its properties are and how they effect the whole trading process, formulating adequate business models for trading intangible goods is a futile effort. In the same way that Copeland’s seminal 1923 article [3] brought about a new understanding of trading processes by classifying goods as convenience goods, shopping goods or specialty goods, we need to identify and understand the various aspects of intangible goods. Analyzing intangible goods when compared to tangible goods or to services is a starting point, but especially what differentiates one intangible good from another is a key issue. The category of intangible goods is so broad and varied that we cannot expect it to be captured by one or two catchwords or a generic strategy. A deeper understanding of the intricacies of intangible goods is needed.

Highlighting similarities and differences among various types of intangible goods is a first small step towards such an understanding. This article attempts to contribute in this area. By drawing on literature from electronic commerce and marketing, especially service marketing, several dimensions were defined among which intangible goods can differ and some additional dimensions were defined as well. Using a very basic model of a transaction, these dimensions were clustered in three categories, namely buyer, seller and delivery. The resulting framework is summarized below.

Buyer-related dimensions:
- value determination
- perishability
- recipient
- complexity of product use
- externalities

Seller-related dimensions:
- specifiability
- customizability
- substitutability
- intensity in use
- existence of a tangible equivalent

Delivery-process-related dimensions:
- transfer mode
- options for tangible support

Each of these dimensions was examined in more detail and examples of the applicability of the dimensions for intangible goods were given.

We do not pretend this article to be the definitive characterization of intangible products, especially since this area of research is still in its infancy. We can only hope that it is a first step in the process of developing a consistent and refined framework for analyzing intangible goods. This framework could then be used to address other issues related to the production and consumption of intangible goods, most notably the pricing issue and the accompanying business models.

References: