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Corporate Communication in the Network Economy: Providing Common Knowledge

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Abstract

This paper draws on ideas in economics and game theory to develop a new theory of marketing and corporate communication in the emerging network economy. We argue that in a network economy, firms and consumers will confront “coordination problems.” With the emerging network economy all this become urgent because the availability and cost of information decreases. Also, timing issues becomes crucial as millions of people get access to the same information simultaneously. That explain why events where masses of viewers simultaneously participate in the same events become so important. We introduce a simple game theoretic model to explain this, and discuss marketing applications and possible strategies.

Key words

Coordination problems, common knowledge, corporate communication

I. Introduction: the Argument

This paper draws on some fundamental ideas in economics and game theory (Hayek 1937; Geneakoplos 1992; Foss 2001; Chwe 2001) to develop a new theory of the marketing function in the emerging network economy. As we have increasingly come to realize, networks have their own logics (Varian and Shapiro 1999; Kelly 1999). In particular, *network externalities* and *critical mass* are crucial aspects of the network economy — aspects that corporate communication needs to take into account. We shall argue that this implies that in a network economy, firms and consumers increasingly will confront what economists and game theorists call “coordination problems”: The network may possess a number of potential equilibria in the strategies (consumption choices and marketing strategies) of consumers and firms — but these equilibria are not equally good from the point of view of consumers and firms. However, unassisted they cannot (always) choose the preferred equilibrium.

In this situation, the ability to influence and take the lead and influence the beliefs of consumers is crucial, because beliefs underlie the choices of consumers and firms. The role of marketing in a network economy, which is rich in potential coordination problems, is then to mould beliefs in such a way that the optimal consumption and sales/marketing strategies are realized — to the benefit of firms as well as consumers.

In particular, the ability to create so-called “common knowledge” conditions — that is, knowledge conditions in which “A knows that B knows that A

knows ... etc. that X is the case" — becomes crucial. We discuss various ways in which the marketing function may bring about such belief conditions. Our argument represents a new way of understanding the fundamental mechanisms behind, for example, advertising, notably in a networked economy that is rich in connected goods, the use of which needs to be coordinated.

II. An Example

To illustrate our reasoning, consider the example of Super Bowl advertising (Chwe 2001). The Super Bowl is the most popular program on American network television that occurs regularly. It is likely to be seen by a majority of American households. In fact, any American household is likely to know that a majority of other households have seen it. The kind of products that are typically advertised on the Super Bowl transmission are products such as the Macintosh, the Discover card, Chrysler's Neon automobile and various Nike and Reebok athletic shoes. Is there something in common between these products?

Consider the case of the Macintosh. Imagine that you are back in 1984. Is there any special problem associated with buying a Macintosh? The answer is, of course, that when you consider buying a Macintosh, you want as many others to buy a Mac as possible. The reason? You want to be able to exchange programs, documents, games, etc. This is what economists call a "network externality." Your problem is that you don't know whether a sufficient number of other buyers will in fact buy a Mac, that is, you don't know whether there will be "critical mass." Enter

the Super Bowl transmission. As a potential Mac buyer, at least this will make you know that other potential Mac buyers have seen the Mac ad. In fact, this goes for *any* potential Mac buyer who has seen the Super Bowl transmission. In other words, “common knowledge” is established. Before we discuss the generalisability of this example, we will take a look at what is going here analytically.

III. Analytical Perspective

The fundamental assumption of this paper is that the moulding of consumer beliefs will become important because firms and consumers in a network economy to a growing extent will face what coordination problems. To understand what a coordination problem is about, consider Figure 1.

Figure 1: A coordination problem in consumption choice

		Consumer B	
		<i>Choose Mac</i>	<i>Choose PC</i>
Consumer A	<i>Choose Mac</i>	<i>100, 100</i>	<i>0, 0</i>
	<i>Choose PC</i>	<i>0, 0</i>	<i>100, 100</i>

The 2x2 matrix in Figure 1 maps a “coordination game” in consumption choice. It involves two “players,” A(rthur) and B(rian), who both have two available “strategies,” namely to buy either a Mac or a PC. They choose and exercise one of these strategies not knowing which strategy the other player will choose and exercise (they are not allowed to communicate). Their behaviours (i.e., their choice and execution of certain strategies) are interdependent, resulting in the “pay-offs” that are shown in the matrix. This because both prefer that they use the same kind of computer, as this makes them able to exchange software, etc. The matrix shows that it doesn’t matter whether both choose PCs or Macs, as long as they make the choice. Solutions to such a problem occur, when each player makes his/her best choice, regardless of what the other player does. This is called a “Nash-equilibrium.” There are thus two (symmetric) (Nash) “equilibria” in this game, that is, situations where neither Arthur nor Brian has an incentive to change their behaviour, given what the other player does, namely where they both choose Macs nor both choose PCs. If they don’t succeed in coordinating on an equilibrium, they will realize zero utilities, for example, because they are unable to exchange programs. They wish to avoid this situation.

Now, can they avoid it, particularly if instead of thinking of two players, we think of thousands of players who need to coordinate their consumption decisions? The problem is of course that given the way that the situation has been designed any agent has no particular rational reason to believe that any other player will make a particular choice; he may just as well choose a Mac as a PC. Of course, you may flip a coin to assist your choice, but that is potentially risky/costly. It would be

better if you *knew* what the other players (or a majority) were going to choose. In fact, it would be better if they knew that you knew what they chose. It would be even better if you knew that they knew that you knew what they chose, etc. — in other words, if *common knowledge* about consumption choices obtain. This would result in the belief conditions where all consumers could make an unambiguous best consumption choice.

Goods for which it is best for all consumers if common knowledge conditions prevail, are called “coordination goods” by Chwe (2001). Goods may possess this quality for various reasons. In some cases, users are really only interested in connectivity and a large network for purely technical reasons. In other cases, such as those of Nike or Reebok athletic shoes, such technical complementarity has very little to do with consumers’ purchasing decisions. Rather, they purchase such goods because they are interested in having others form certain beliefs about them, for example, that they, too, are members of a certain in-group. Also, the purchasing decision may be purely a matter of snobbism. However, in all these cases, consumers face a coordination problem. And in all of these cases, establishing common knowledge may be key to having the consumers solve their coordination problems — and to firms having success. Some firms, if certainly not all, are acutely aware of this. A striking example was an increasingly squeezed WordPerfect filing a court complaint against Microsoft to make the court stop the Microsoft claim that Word was the globally most popular software for word-processing purposes. Another example is Netscape’s Navigator campaign, which

revolved around slogan, "Netscape Everywhere." In the following section, we briefly discuss some implications for marketing.

IV. Implications for Corporate Communication

The Nobel winning Austrian economist Friedrich Hayek (1945) emphasized the capacity of markets to quickly and efficiently spread and coordinate knowledge, talking more than metaphorically about the "telecommunications systems of the market." In marketing, the emphasis has often been on coordination in a vertical marketing system or a value chain (as in Alderson 1957). It is well known that for such systems or chains to function well, the flow of products or services and knowledge needs coordination. Our perspective here is different, although we share Hayek's concern with the coordination of knowledge, since we focus on the individual consumer coordinating his consumption in view of what other consumers do rather than on coordination in vertical value chains.

In the "old economy," interdependencies between consumers' choices were known as "band wagon-", "snob-" and "Veblen effects." Thus, a concern with the implications of social buying motives is not new *per se*. In the older literature, both the price signal and the number of other consumers were important issues. However, in an increasingly networked and information-based economy, all this becomes even more important because more and more products and services are linked, giving rise to coordination problems and network externalities. The counterpart to this is that information has become increasingly available, at a

generally lower price. In turn, this means that the timing issue becomes urgent as millions of people can easily get access to the same information simultaneously.

While establishing common knowledge was earlier a matter of direct eye contact, participation in rituals, etc. (see Chwe 2000), increasingly mass communication can facilitate common knowledge conditions on a large scale. This explains where masses of viewers simultaneously eye in on the same events become so important as means of coordinating interdependent (consumption) choices.

As coordination goods become increasingly common, coordination becomes increasingly needed, and the means of achieving coordination through mass communication become available at lower cost, the latter becomes a competitive frontier. If Apple was perhaps the first company to "see" or just accidentally use this opportunity for the first time in 1984, there is nothing coincidental about taking advantage of mass scale events any more. Coordination goods are traded on global mass markets. In the face of missing common knowledge, the risk of purchasing a particular good or solution may seem too big and the consumer may refrain from that purchase.

Therefore, any marketer dealing with such goods need to address the issue. The tools that are available fall into several groups. We discuss these in the following.

Pre-market signalling can in various ways be a useful tool. In general, all communication means can be used in order to communicate a future market launch (Heil and Robertson 1991). Using a social network approach Workman (1998)

argues that informal verbal communication can influence the experts, opinion leaders and the retailers that a particular standard or solution will become a winner. In the last 2 years “virus marketing” has emerged in the form of chains of e-mails (Beckmann 2000). When using the “cc: function” (or an equivalent copy function) of e-mails in pre-market signalling of the Sony MiniDisc in 2000, the company was able to convince a large number of potential customers to sign up for a game that made them aware that a number of their friends *also* had the knowledge, that they were aware of their knowledge about the product and the narratives around it. The result was common knowledge in the “teenager market” that “the others” were buying this product and in order to be “in-group”, this was the product to buy. Later, the same strategy has been used for a Newsletter where potential customers are asked to sign up for a prize contest and simultaneously asked to make up a “winning team”, providing the e-mail addresses of the team. The next person is made aware of who sent the previous mail as well as asked to repeat the sequence. In most cases such strategies are used in order to reach critical size mass with the support of first mover advantages.

Corporate branding is intended to serve as an umbrella for several products brands and product lines in such a way that the values and reputation of the company are clearly signaled. While recognition and image are vital issues in all branding (Keller 1993), the communication need not be explicit in the same way as in pre-market signalling. The recognition of name, symbol, visual design etc. may be sufficient communication in order to invoke sufficient “implicit messages”

(Underwood and Bright 1996) that trigger the associations connecting the brand with a particular standard.

The staging of events, rituals and shows are other possible strategies for bringing about common knowledge conditions, particularly when situations are staged that attract the attention of large numbers of consumers. The size needed is relative to the target group, yet as the “super bowl” example above shows, this can be very large indeed. In other situations, the target group is limited to devotees in a particular field. Many companies just take advantage of existing events. That can be an explanation for premium priced advertising slots in the coverage of these events. Such communication mainly draws on the consumer's limited awareness, implicit perception and emotional reactions rather than deliberation.

If our arguments hold, we have in effect developed a case against the view that “mass marketing” is obsolete and will be replaced by “markets of one.” The common knowledge argument contradicts this for many products. The mass market is the core of these co-ordination problems as they occur in the network economy. Domesticated markets may also prevail alongside, but will more likely found backwards in the value systems. Companies like Dell, who may be said to provide products with some network externalities (like signalling membership of an in-group, rather than technically), may be able to ride on both horses. They can use mass advertising in order to provide signalling to prospective customers and yet, when they become customers, customize the product for each individual customer. So, the future of markets and marketing may reveal more forms that could co-exist.

For instance, business models that use the Internet may be designed to preserve some individual adaptations and still function as if it is a mass market.

There seems to be a need for further research into the goods and services of the new network economy. In the “old economy”, terms such as “bandwagon-”, “snob-” and “Veblen-effect” prevailed, and it seems in due time that in particular those concepts should be reconsidered in the light of the “new economy” to the extent that this implies an increasingly networked and information-intensive economy. Terms such as “co-ordination goods,” “social brands,” etc. may not be precise enough and further conceptual scrutiny should give better insights into the categorization of goods in such terms. To us, it seems likely that the focus on several senses and both cognitive and emotional communication should be combined. Such mechanisms as the “mere exposure effect” (Zajonc 1980) and the creation of “positive affect by small rewards” (Isen 1987) seem to be mechanisms that can explain current practice. They explain to a large degree why branding works through recognition of names, designs, symbols etc. and should therefore be able to explain how common knowledge can occur on large scale global markets.

V. Conclusion

This paper is based on a general argument that revolves around the (possible) need to establish common knowledge conditions under certain conditions — known as “coordination problems” — that may arise when consumption choices are interdependent. We submit that that these game-theoretically ideas are highly

pertinent for, and able to a number of marketing challenges, in the network economy. While it may seem easy to categorize goods according to their typical purchase- and consumption criteria, for many, and perhaps increasingly many, goods more complex issues are at stake because of the involved due to the knowledge issues. Some products and brand will fail despite their intrinsic qualities because the competitors take advantage of first mover advantages and reach critical market size using multiple strategies. One lesson to learn from this is that it is important to understand the social and cultural mechanisms at work that create the patterns involved with common knowledge and the finer details of deviation from its absolute state. Further research will show which psychological mechanisms that best support common knowledge. The marketing discipline does not yet provide the adequate tools for understanding the marketing function in the emerging network economy and how it may cope with the specific problems that are introduced by coordination goods. We have argued that these tools are likely to center on such notions as “common knowledge” and “social brands.”

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