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POWER OF GOOGLE

A study on online advertising exchange

Master's Thesis
in marketing

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9.9.2009
Turku

Abstract

This study is a theoretical analysis of exchange relating to online advertising. The goal is to describe and explain central structures, processes and relationships that enable the distribution of online advertisements to end customers (i.e. website visitors). The study is based on relevant literature mainly from marketing, economics and supply chain management which is used to examine various channel structures and roles. Exchange relationships between advertisers, publishers and advertising networks are analyzed by applying agency theory which involves i.a. the concepts of asymmetric information, bounded rationality, moral hazard and adverse selection. The material for analysis is retrieved from the author's general perceptions, Google's website and other Web sources.

Relating to exchange structures, it was concluded that the so-called middleman effect is important, referring to an effective use of intermediaries which increases contactual efficiency and lowers relationship governance and transaction costs. This effect arises from intermediaries' specialization, expertise and experience, and it is widely exploited in the modern online advertising where the number of individual contacts may rise to millions.

Regarding exchange processes, different levels of mediation were identified, ranging from one-to-one to many-to-one aggregated relationships. Additionally, keyword auctions play an important role as both a price-setting and governance mechanism for quality. Keyword auctions function so that high performance (quality) is rewarded by lower keyword prices and better ad positions, whereas low performance is punished by increased bid rates and lower ranking.

Finally, the relational analysis theorizes several potentially hazardous processes leading to adverse selection in online advertising, thus describing outcomes of wide-spread quality failures in the online advertising market. Essentially, problems may relate to bad advertisers (bad advertising causes clutter and banner blindness), bad publishers (click fraud drives off high-quality advertisers) or bad network (inability to control quality). Second, while it may be seen evident that click fraud is the most discussed type of opportunistic behavior in online advertising, often it is mistakably associated with only publishers. In contrast, this study concludes that also advertisers and network are subjected to several cases of moral hazard, often overlooked when discussing uncertainty and risk in online advertising. Specific types of advertiser's moral hazard include the problems of "free exposure" and "free traffic", whereas the network faces moral hazards of unequal revenue sharing and inefficient (or quasi-efficient) fighting against click fraud. There is also a problem of "free dissemination" that relates to bad placement or bad traffic and may cause comparative losses for an advertiser even without the presence of opportunistic publishers.

Tiivistelmä

Tutkimus on teoreettinen analyysi Internet-mainontaan liittyvästä vaihdannasta. Tarkoitus on kuvata ja selittää keskeisiä rakenteita, prosesseja ja vaihdantasuhteita, jotka mahdollistavat mainosten välittämisen loppuasiakkaille (ts. Internet-sivun vierailijoille). Sovellettavat teoriat liittyvät pääasiassa toimitusketjun hallintaan, arvoketjuteoriaan sekä yritysten välisiä vaihdantasuhteita kuvaaviin malleihin. Mainostajien, julkaisijoiden ja mainosverkon välisten vaihdantasuhteiden analysoinnissa hyödynnetään päämies–agenttiteoriaa, johon liittyviä käsitteitä ovat mm. asymmetrinen informaatio, rajoitettu rationaalisuus, moraalikato ja epäsuotuisa valinta. Analyysissä käytetty materiaali perustuu kirjoittajan yleisiin huomioihin, Googlen websivustoon ja muihin Internet-lähteisiin.
 Vaihdantarakenteita tutkittaessa käy ilmi mm. välittäjäefekti, joka viittaa välittäjien tehokkaasta hyödyntämisestä saataviin etuihin, ml. parantunut kontaktitehokkuus ja alhaisemmat suhdehallinta- ja transaktiokustannukset. Nämä hyödyt syntyvät välittäjän erikoistumisesta, asiantuntemuksesta ja kokemuksesta ja ne ovat erityisen tärkeitä nykyaikaisessa Internet-mainonnassa, jossa yksittäisten kontaktien määrä voi nousta miljooniin. Prosessien osalta merkittävimmät löydöt liittyivät hakusanahuutokauppaan (*keyword auction*), jota mm. Google käyttää sekä mainostilan hinnan määrittämisessä että mainostajien laadun kontrolloimisessa, niin että hyvästä suoritustasosta palkitaan alemmilla hakusanahinnoilla ja paremmilla mainospaikoilla.
Tutkimuksen pääasiallinen anti vaihdantasuhteiden osalta on seuraavanlainen: ensiksi, tutkimuksessa esitetään useita epäsuotuisaan valintaan johtavia prosesseja, jotka kuvaavat laajamittaisten laatuongelmien potentiaalisia vaikutuksia Internet-mainontaan. Ongelmat liittyvät sekä huonoihin mainostajiin (mm. bannerisokeus, *banner blindness*), julkaisijoihin (klikkauspetos, *click fraud*) tai välittäjään (kyvyttömyys tehokkaaseen laadunvalvontaan). Toiseksi, vaikka tutkimuksen perusteella on selvää että klikkauspetos on yleisimmin keskusteltu opportunismin muoto Internet-mainonnan piirissä, se useimmiten liitetään ainoastaan julkaisijoihin. Kuitenkin tässä tutkimuksessa esitetään, että myös mainostaja ja välittäjä altistuvat eri moraalikadon ilmentymille, mikä jää usein vähälle huomiolle keskusteltaessa Internet-mainonnan riskeistä. Erityisiä mainostajan moraalikadon muotoja ovat "ilmainen näkyvyys" ja "ilmainen liikenne", kun taas mainosverkon houkutuksena on epäoikeudenmukainen tulonjako ja tehoton (tai näennäistehokas) taisteleminen klikkauspetosta vastaan. Lisäksi tutkimuksessa määriteltiin ns. vapaan levityksen ongelma, joka johtuu mainosten huonosta sijoittamisesta ja huonolaatuisesta liikenteestä. Tämä ongelma voi huonontaa mainostajan asemaa vertailussa toisiin mainostajiin eikä sen ilmeneminen välttämättä edellytä opportunistisia julkaisijoita kuten moraalikadon tapauksissa.

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LIST OF ACRONYMS

CAC	Customer acquisition cost
CPA	Cost per action
CPC	Cost per click
CPI	Cost per impressions
CPL	Cost per lead
CPM	Cost per mille ("cost per thousand impressions")
CPS	Cost per sale
CTR	Click-through rate
CVR	Conversion rate
KPI	Keyword profitability index
PPA	Pay per action
PPC	Pay per click
PPL	Pay per lead
PPP	Pay per performance
PPS	Pay per sale
ROI	Return on investment
SEM	Search engine marketing
SEO	Search engine optimization
SERP	Search engine result page
TAC	Traffic acquisition cost
TSA	Transaction specific asset

1   INTRODUCTION

*The key question is not whether to deploy Internet technology –
companies have no choice if they want to stay competitive – but how to
deploy it. —Michael Porter*

1.1   Introduction to thesis

1.1.1   Research motives

Hundreds of millions of users are surfing the Web all around the clock. In Finland, for example, 80% percent of people aged between 16–74 access the Internet daily (Tilastokeskus 2009). The potential amount of customers that a firm can reach at any time of the day is enormous. But, while there are hundreds of millions of users, there exists many times more websites. The marketing task is to reunite customers and firms in the extremely scattered and competitive market that the Internet has developed into. For this purpose, understanding the particular nature of the Internet and its impact on advertising exchange is highly relevant from the marketing perspective.

Six billion searches are conducted daily through Google (Nielsen Online 2009), offering a highly feasible marketing platform. Intermediaries not only act as gatekeepers between customers and firms, but also harness the power of millions of sales agents around the Internet. However, because of fierce competition, firms need to adopt new marketing practices in order to compete effectively and remain attractive to end customers. Before venturing out, marketers need to be aware of the dominant market players, their roles and relationships, different goals and motives, and activities that each of them is specialized in, so that they are able to build efficient networks, strategic value can be made clear and – finally – efforts are put where the money is.

As Porter (2001) points out, discussion has migrated from whether the Internet actually provides business advantage into how it should be strategically exploited. This thesis aims to facilitate the online marketing challenge by providing critical information on structures, processes and relationships surrounding online advertising exchange.

In particular, the thesis studies the exchange between central actors of online advertising, including *advertisers*, *publishers* (or content providers, media) and *intermediaries* (portals, search engines and advertising networks). Originally, the Internet was supposed to eliminate all the "unnecessary" middlemen (see Chapter 2.3), but phenomena such as affiliate marketing, search advertising and the Web 2.0 ideology

(social media) has reinstalled their value as a means to attract more leads, generating into real business. As a whole, this development leads into more and more sophisticated networks where even commissions are distributed between many actors. Managing these networks has a lot of similarity with the supply chain management (SCM) discipline known from traditional value chains; for example regarding the issues of coordination, trust and division of tasks between parties.

The general purpose of the thesis is to describe and explain the particularities of exchange relating to online advertising. The precise goal is to increase understanding of the critical structures, processes and relationships relating to the online advertising exchange. To accomplish these motives, following research questions are posed:

1. *What are the central structures in delivering advertisements to website visitors (end customers) via a chain of actors in the online advertising market?*

2. *What are the critical processes and models relating to the distribution of online advertisements?*

3. *What are the main implications of agency theory when applied to relationships between actors of online advertising channel?*

The first question involves defining online advertising exchange as a particular type of supply chain, dubbed *online advertising channel*, in which the exchange takes place. In defining this channel structure, key actors are identified along with their specific roles and functions (tasks) in the chain. Additionally, the hierarchies, or "steps", inside the process of ad distribution are discussed. Overall, actors and their positions are referred to as channel structures.

The second question concentrates on the core exchange processes inside the online advertising channel. More precisely, the discussion concentrates on ad distribution processes, examined from different perspectives; buying and selling of ad space (e.g. keyword auctions); and pricing ad space, which refers to alternative compensation models in exchange between advertisers and publishers.

The third question applies theories on exchange dynamics and economic behavior relating to the principal–agent problem to the online advertising channel. The aim is to describe and explain the nature of exchange relationships in the online advertising channel by analyzing the relational linkages with established theories of exchange dynamics. The principal–agent problem and the relating agency theory are used to explain different aspects of economic behavior. A critical assumption, as discussed in Chapter 4.2, is that agent's behavior in exchange relationships is shaped by a particular type of economic rationality. The online advertising channel is no exception in this sense, and thus it is seen relevant to study relational dynamics more closely.

While "exchange" generally refers to trade between buyers and sellers in a market[1], in this thesis the concept is slightly widened: first, it relates to buying and selling of advertising space and other objects of trade (e.g. keywords); second, it is used refer to relational ties ("exchange relationships") that exist to accomplish processes of distributing online advertisements to end customers via a chain of associated actors, i.e. online advertising channel. More specifically, exchange relates to value creation inside the channel, including not only interfirm relationships but also relationships between firms and individuals as it is often the case between advertisers and publishers.

The concept of transaction is important when examining economic exchange – transactions can be described as critical exchange processes; e.g. buying and selling. A transaction is a "process by which a good or service is transferred across a technologically separable interface" (Chuang, Hu & Hsieh 2007, 4). Generally, commercial exchanges can be classified as either (1) *discrete transactions* that are of short-term and non-recurrent[2] (also called "arm's length"), or (2) *relational exchanges* that include joint planning, some degree of interdependence and long-term orientation (Melton 2006, 264). Discrete transactions tend to be focused on information and economic content instead of social exchange, whereas social and psychological components play a greater role in relational exchanges (Ching & Ellis 2006, 558). Thus, relational exchange involves more complex topics than discrete transaction, including e.g. issues of trust, commitment, sharing and equity, dependency, conflict and power (see e.g. Melton 2006; Fink, James, Hatten & Bakstran 2008). Therefore, exchange can be seen as a somewhat wider concept than transaction. In turn, exchange as a concept is narrower than distribution which requires a *sequence of exchanges* between channel members – in other words, before ads can be served to end customers, individual exchanges must take place. These exchanges are between buyer and seller[3] (referred to as „dyad'), or mediated by a middleman as discussed in Chapter 2.3.

Channel is also a central concept in this study. It is used as a synonym of marketing channel. Similar terms referring to the same idea are for instance distribution chain and supply chain (in particular for logistic relevance). Generally, a chain or channel ideology refers to a network of actors who work together (in cooperation) in order to achieve both mutual and individual goals (see e.g. Reve & Stern 1979, 406). Generally, channels relate to the flow of goods from producers to end users in the supply chain, marketing channel or distribution channel. Marketing channel, for example, can be

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[1] "Market is the place where supply meets demand. Suppliers and customers meet, discuss and evaluate the conditions for exchange of goods and services, and exchanges take place." (Håkansson 1982, 10).
[2] "The archetype of discrete transaction is manifested by money on one side and an easily measured commodity on the other [and is characterized by] very limited communication and narrow content." (Dwyer et al. 1987, 12.)
[3] Or between each deliverer of and recipient of good until the product reaches the end customer, if no buying and selling is involved in the distribution process.

defined as follows (Wikipedia 2008a): "a set of practices or activities necessary to transfer the ownership of goods, and to move goods, from the point of production to the point of consumption and, as such, which consists of all the institutions and all the marketing activities in the marketing process." These concepts are often used interchangeably as synonyms, as are "channel" and "chain". In this work, it has been decided to use the term "online advertising channel" to describe the channel structure under examination. Closely related concepts are distribution channel and, in some sense, marketing channel but considering their particular sense of delivering physical goods, not digital advertisements, it is seen more fitting to make a clear distinction[4]. This also constitutes the focus of the thesis which is not e-commerce, studied widely under other contexts, but the exchange in the online advertising market (channel).

Finally, as the title of the thesis implies, the search engine firm Google is emphasized in the applied parts of this study. This is mainly because the firm can be seen as a forerunner in the online advertising industry in terms of technology, innovation and market share (see Chapter 2.2.1.4); e.g., text advertising has become the dominant format in online advertising much due to Google's success. In respect to online advertising channel, Google can currently be seen as the dominant member (channel captain) – therefore, it has also a strong impact on the exchange taking place in the channel. Also, Google acts both as a search engine and an advertising network, linking exchange parties (buyers and sellers) under one marketplace. Finally, Google's advertising programs have been touted as the *de facto* standard of the otherwise fragmented online advertising industry, which makes it a logical target of analysis.

1.1.2   Methodology and disposition

This thesis is mainly a descriptive study, with some explanatory elements that rely heavily on theoretical foundation and the structure of Google's advertising programs. In each chapter, the topic is approached by presenting a generic theoretical perspective, after which a perspective on online advertising exchange will follow. Basic theory of supply chain and value theory are applied in relation to the first research question. The second question involves theories on roles and division of tasks, while the third question benefits from agency theory which is a collection of theories describing the relationship between a principal and an agent who has been given tasks to complete for the behalf of the principal, and the contingencies arising from this delegation.

Considering the research objectives, the focus is partially overlapping across research

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[4] Especially since, by definition, online advertising is a "form of promotion that uses the Internet and World Wide Web for the expressed purpose of **delivering marketing messages** to attract customers" (Wikipedia 2008c).

fields, especially when introducing the concepts of rationality and (economic) decision-making. The cross-scientific nature is seen not as a threat but as an opportunity to build a comprehensive picture of the exchange in online advertising.

The disposition of the thesis is presented in the following figure:
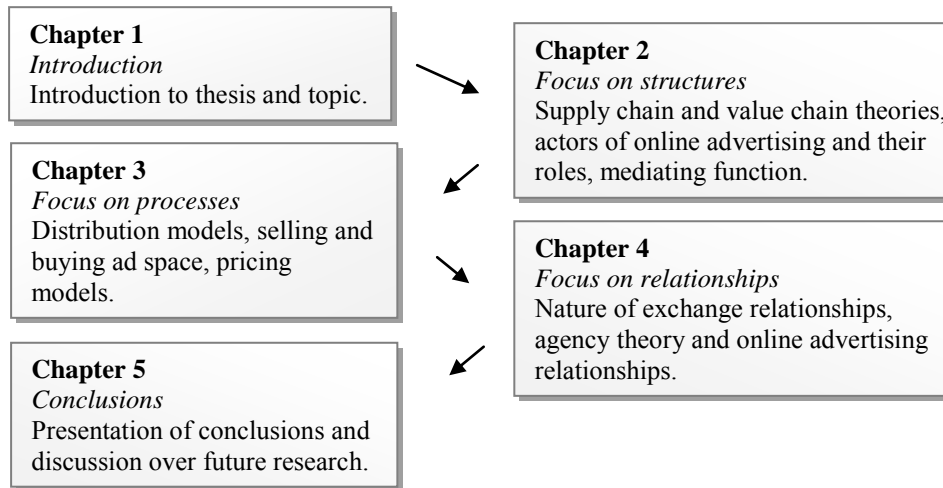
Figure 1   Structure of thesis

The first chapter of the thesis defines the purpose, goals and outline of the study while introducing central concepts relating to online advertising – a conceptual separation between Internet marketing and online advertising will also be established. Further, the particularities of online advertising in comparison to traditional advertising are discussed to understand its nature before examining the exchange dimension.

The second chapter introduces the supply chain paradigm, including some basic theory of supply and value chains. The specific focus will be on describing online advertising as a value system, which will be done by presenting a basic value typology. Second, key actors are identified and their roles discussed by presenting alternative role classifications. Finally, the role of intermediation is analyzed.

The third chapter comprises of essential models relating to exchange in the online advertising channel, i.e. advanced models on ad distribution, buying and selling of ad space (e.g. keyword auctions), and different pricing models used in concurrent online advertising. Models on ad distribution contain macro- and micro-perspectives, and online advertisements are also examined in the property of good.

In the fourth chapter, relationships in online advertising channel are studied by a theoretical analysis. The purpose of the analysis is to describe and explain online advertising relationships by using different concepts of exchange dynamics. More particularly, agency theory is applied, so that the actors are seen to delegate tasks to one another, resulting in diverse externalities widely discussed in agency theory literature.

The analysis is based on general perceptions about relationship dynamics (e.g. different motives and interests), information from Google's website, and some blog and discussion forum topics written by publishers that were found relevant in the course of this study. This data material will be contrasted to the theoretical background in order to give an insight of relationships between the main actors of online advertising.

1.1.3   Topicality of study

The past decade has shown impressive growth for online advertising. With diversifying methods and increasing media budgets, firms' ad spending has grown steadily, winning shares from other media. Jupiter Research (2007) predicts that the total spending of online advertising will increase from $19.9 billion in 2007 to $35.4 billion in 2012. Particularly, search advertising is to increase at a 12 percent compound annual growth rate (CAGR), whereas display advertising will grow at a 13 percent CAGR during this period (Jupiter Research 2007). It is projected that the growth rate for the global paid search advertising market will be even higher, reaching a 37 percent compound annual growth rate and exceeding $33 billion in 2010 (Ghose & Yang 2007, 3[5]).

The following figure depicts the cumulative quarterly growth of Internet advertising revenues in the United States between 2000 and 2007.
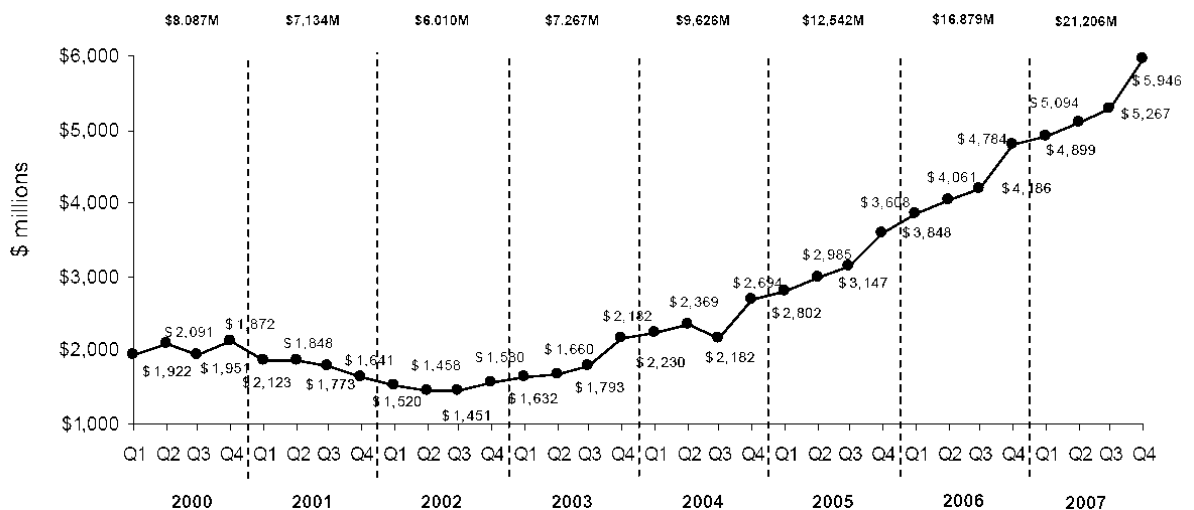
Figure 2   Quarterly growth of online advertising revenue in 2000–2007 (IAB
                Internet Advertising Revenue Report 2008, 6)

As depicted in the graph, the online advertising industry has been growing steadily for a number of years. Further, the growth is expected to continue in exceeding the

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[5] Original source: Nielsen NetRatings (2007) <http://www.nielsen-online.com/>.

growth of total ad spending, resulting in Internet winning revenue from other media (Sweney 2008). As new generations are using more time online, replacing television as the primary source of entertainment, firms and brands that want to be successful will have to adapt to changing customer behavior, and find new ways and new channels to reach customers – briefly, follow the customer transition to the Web. At the same time, however, multichannel marketing is becoming more popular. This is particularly visible in advertising campaigns that draw benefit from other media – for instance, television ads may refer to a firm's website for more information (Chaffey et al. 2006, 77).

The drivers for growth include strong increase in display inventory, increased volume for paid click advertising, and improved targeting technology (Jupiter Research 2007). Increasing online media budgets and competition among advertisers will also push keyword prices up, while increase in supply will balance this effect (ibid.). Moreover, popularity of search engines is be likely to feed growth in the search advertising sector, considering that 94% of online consumers use search engines to find information on the Web (Ghose & Yang 2007, 3). Overall, online advertising is predicted to become more important in firms' marketing campaigns.

By measuring growth, spending and methods deployed by advertisers, the forerunner country of online advertising is, without a doubt, the United States. With this in mind, the global growth of the industry is catching up – dependant solely on the availability of the Internet. In the US, the spending for Internet advertising amounted to €14.5 billion in 2007, whereas Europe's spend was €11.2 billion (IAB Europe 2008). Also in Finland these figures have been impressive, although less so than in the more developed markets. In 2007, total money targeted for online campaigns amounted to €110 million, which was around 30% more than the previous year (IAB Finland 2008). All in all, the industry's global development has shown a steady growth for over a decade now.

The fact that the online advertising industry is growing fast and changing at rapid pace makes it a very topical research subject in itself. The amount of research has, in effect, increased exponentially following the evolution and growth of online advertising; however, studying online advertising *per se* is still in its infancy when compared to other media, especially from the perspective of this thesis. The existent literature has focused on mainly technical aspects such as keyword auctions (see e.g. Varian 2006; Kiritchenko & Jiline 2008), or B2C interaction (see e.g. Bidgoli 2006; Chaffey, Ellis-Chadwick, Mayer & Johnston 2006). In contrast, there has been little research over Internet as an operational marketing channel that needs to be managed like any other marketing channel, let alone exchange taking place in this channel. Studies of online advertising often emphasize the use of the Internet as a medium, hence approaching online marketing from a marketing mix perspective. This thesis tries to address this shortfall by rejoining the media view with the distribution channel view – after all, both viewpoints deal with reaching the end customer. Further, although widely

studied in the general context, there is little research focusing on the relationships between actors in online advertising, mainly relating to the newness of the industry. This is a significant lack because it can be argued that the dynamics between actors have a strong impact on the development of the industry. As a pre-condition, it is important to notice that online advertising may be described as an immature industry; as noted by Subirana and Wright (2007, 21): "because the industry is still in the early development stage and switching costs[6] and user loyalty are low, there is potential for change in the competitive landscape", implicating that the industry remains volatile also in the near future in terms of both structural and process-related changes.

In conclusion, it is the elements of (1) *impressive growth*, (2) *maturing industry* and (3) *little (specific) scientific insight* that make this research on online advertising exchange relevant.

1.2 Introduction to Internet marketing and online advertising

1.2.1 Branches of Internet marketing

Generally, „online marketing', „Internet marketing', „online advertising' and „Internet advertising' are synonyms of the same idea, which is to employ marketing strategies over the medium of Internet. Li and Leckenby (2004, 2) note that "the expanded function of Internet advertising comes from its horizontal integration of three key marketing channel capacities", including communication, transaction and distribution channel, and "vertical integration of marketing communications", which includes advertising, public relations, sales promotion and direct marketing. Therefore, online advertising can be seen as one part of Internet marketing.

Then again, Internet marketing is a part of firms' marketing mix as other media. But the importance of Internet varies: for dot-com companies it is the main marketing channel, whereas established firms may use the Web rather as a brand management tool (Quelch & Klein 1996). Consequently, the Web relates to multi-channel marketing, and its importance varies according to factors such as the nature of business (see e.g. Benediktova & Nevosad 2008). As a part of marketing mix, the Internet should be integrated with other channels, creating synergy which increases value for both the customer and the firm (Chaffey, Ellis–Chadwick, Mayer & Johnston 2006, 4).

Although Internet marketing is often closely tied to e-business (or e-commerce, e-

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[6] Costs of changing a supplier.

tailing), it should not be confused with that term – e-business is about completing transactions ("doing business"), whereas Internet marketing is the marketing function (i.e. a prior step of business designed to enhance business functions). Traditionally, e-business includes selling goods or services via the Internet, be the nature of products physical or digital (Goldkuhl 2005, 5). In contrast, online marketing is a form of facilitating business functions in the Internet by promotional means.

Internet marketing can be divided into four branches that differ substantially from one another. These branches are (Wikipedia 2008b):

a. *search engine marketing*

b. *e-mail marketing*

c. *affiliate marketing*

d. *on-site advertising*.

Search engine marketing (SEM) is a form of online marketing further divided into (1) search engine optimization, or SEO, and (2) pay-per-click advertising, or PPC (Wikipedia 2008b). Search engine optimization refers to improving a website's search engine ranking by using a variety of on-page and off-page methods (see e.g. Paananen 2006; Ghose & Yang 2008b). PPC advertising is also called "text advertising", "paid search", "search advertising" or "keyword advertising", and it refers to advertising on search engine result pages (SERP). Synonyms for SEM are "search marketing" and sometimes "Google marketing" due to the firm's dominance in the sector.

E-mail marketing is carried out by newsletters. It is a form of permission marketing; subscribers are given a freedom to opt-in (subscribe) and opt-out (unsubscribe) – in the US, for example, a failure in providing an easy way of opting-out is a criminal act regarded as a form of spamming (Office of the Law Revision Counsel 2008).

Affiliate marketing is an important form of Internet marketing, under which the so-called affiliates provide visitors to the advertiser's website. The advertiser, or sponsor, is given a chance to convert the leads into customers; if this succeeds, publisher is paid a commission. In a basic sense, affiliate marketing is a form of performance marketing.

On-site advertising as a form of marketing bears most similarity with traditional print or television advertising. An advertiser, most commonly a firm, buys advertisement space from the website owner (Wikipedia 2008b). Sometimes the seller is a private person who has developed the website with little financial goals. This may create particular challenges in the advertising relationship, discussed in Chapter 3.

1.2.2 *Particularities of online advertising*

Online advertising takes place when "advertiser pays to place advertising content on another web site" (Chaffey et al. 2006, 391). According to Zeff and Aronson (1999, 11),

online advertising, as all advertising, strives "to disseminate information in order to affect a buyer–seller transaction". But, they add, "Web advertising differs from other media by enabling consumers to interact with the advertisement" (ibid.). For example, consumers click the ad for more information, or to purchase the product directly in the firm's website. Additionally, the interactive media enables consumers to access information on demand, making advertising "targeted, by invitation, and accountable" (Jansen, Hudson, Hunter, Liu & Murphy 2008).

Based on the previous definitions, we notice that the primary goal of online advertising is the same as in offline advertising. Yet, there seem to be some distinctive factors differentiating it from traditional advertising such as print, television or direct advertising. Based on literature, at least the following differences can be distinguished:

- *availability* (see e.g. Goldkuhl 2005)
- *critical mass* (see e.g. Timmers 1999)
- *interactivity* (see e.g. Cheung, Lee & Rabjohn 2008)
- *pull* (see e.g. Chuang & Chong 2004)
- *speed* (see e.g. Zeff & Aronson 1999)
- *tracking potential* (see e.g. Misra, Pinker & Rimm-Kaufman 2006)
- *targeting potential* (see e.g. Prabhaker 2000), and
- *low entry costs* (see e.g. Subirana & Wright 2007).

Availability refers to the fact that the Web is accessible any time of the day – broadcasting is on 24 hours a day throughout the year (Morgan Stanley 1996, 27). Wherever there is an Internet connection available, the medium is accessible for both advertisers and customers. Pitt, Berthon and Berthon (1999, 20–21) refer to the effects of high availability by terms such as "irrelevance of location", "homogenization of time" and "death of distance", meaning that advertisers are able to reach audiences regardless of their physical location or the hour of the day.

Additionally, the critical mass of customers already exists in the Web (Timmers 1999). Internet has spread through all spheres of the society, reaching nearly every focus group imaginable. This guarantees a constantly growing user base, translating into strong customer potential. Especially the penetration of Internet in Africa, Middle-East and Latin America has increased the user base exponentially (Internet World Stats 2009). The growth of the Internet compared to other media has been phenomenal – while it took 38 years for radio to reach 50 million listeners and 13 years for the television to acquire the same amount of viewers, the Internet is estimated to have reached the limit of 50 million users in only four years (Elon University/Pew Internet Project 2009), currently reaching over 1.5 billion people around the world (Internet World Stats 2009). Further, the Internet is not likely to disappear in the seeable future, which reduces the risk of investing in online operations.

Interactivity is present at many levels – relating to firms, users contribute not only by

clicking ads but by creating content themselves. Firms may exploit this effect e.g. through crowdsourcing[7]. Customers also interact with one another which enables effective peer-marketing – conceptually, e-WOM (electronic word-of-mouth) and social media are closely related to this interaction (see e.g. Cheung et al. 2008).

Furthermore, Web technology operates by a pull mechanism; without consumer effort no information can be accessed. Consequently, Internet requires a high access motivation and involvement from consumers (Chuang & Chong 2004, 145). When online, consumers are in a search state of mind rather than passively receiving message broadcasted by advertisers. This may facilitate the adoption of advertising messages. However, while the Web requires strong access motivation, its technical features also grant consumers strong control over what content they view (ibid.). Otherwise spoken, the switching cost between websites is typically low. Additionally, the pull factor may be countered by the effect of so-called banner blindness, referring to the fact that customers may ignore advertising messages (especially banners) in an automated, cognitive process (see Benway & Lane 1998; Burke, Hornof, Nilsen & Gorman 2005).

Speed refers to firms' possibility to receive instant feedback from customers. Also, advertisements and website content can be updated or changed at any time. Consumer response and results of advertising are immediately visible when measuring click-through rates and page-views (Morgan Stanley 1996, 76). Based on the feedback, marketing campaign effectiveness can be evaluated in real-time basis and conclusions about ad-liking can be drawn instantly. Further, relevant changes can be made with little or no delay – this is an advantage compared to print, where the ad cannot be changed until a new edition of the publication is released; or to television, where the high development costs make frequent changes difficult (Zeff & Aronson 1999, 14).

Tracking performance is also more flexible online than traditional marketing efforts (Misra et al. 2006, 1). Besides tracing customer behavior, it is also possible to gather market intelligence fast and cost-efficiently, relating to prices, competition, market offerings, *et cetera* (Timmers 1999). Performance data based on customers' behavior and preferences can be retrieved either via explicit communication or statistical data – results can be used to plan marketing tasks and discover bottlenecks in performance.

In theory, the Internet significantly improves the accuracy of ad targeting. Compared to other media, "Web offers a level of targeting that advertisers can't find anywhere else" (Zeff & Aronson 1999, 11) Targeting can be based on for example demographic, geographic or behavioral data. Through targeting, Web enables true one-to-one advertising (Yan & Po 2006, 7). As pointed out by Prabhaker (2000, 164), the Internet is an interpersonal medium while having the mass power of traditional media – thus, the traditional "faceless" mass audiences can be changed to highly identifiable focus groups

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[7] See definition at http://en.wikipedia.org/wiki/Crowdsourcing.

(Jansen, Hudson, Hunter, Liu & Murphy 2008). Since the Web is accessed primarily because of interest in the content, the segmentation opportunity is highly achievable (Morgan Stanley 1996, 27).

Finally, entry costs for starting an online advertising campaign are relatively low, especially in network-based advertising models; e.g. ”a new advertiser paying in U.S. dollars can activate its AdWords account with just $5, and can then choose a maximum cost-per-click (CPC) ranging from $0.01 to US$100.” (Subirana & Wright 2007, 36). Equally important, distribution costs of online advertisements are low, so millions of consumers can be reached at a fixed cost (Morgan Stanley 1996, 27). Further, commercial websites are facing competition from large numbers of non-commercial sites in the online market. This is a rare instance, enabled by the low entry cost of establishing a website, and could hardly be possible in a physical market. Logically, this places emphasis on the innovativeness of the service as the effect of resources is limited in creating competitive advantage.

To conclude, the potential and benefits of online advertising attract advertisers to migrate from traditional advertising to the Internet medium (Morgan Stanley 2006, 9). Because the low entry cost has increased the number of entrants in the market place, laggards are facing competitive pressures to enter the market. Rather than advantage, it seems, online presence has become a competitive necessity for firms.

1.2.3 Formats of online advertising

Interactive Advertising Bureau (IAB 2009a, 8) identifies nine formats of Internet advertising which are presented in the following table:

Table 1   Formats of online advertising (IAB 2009a, 8)

Format	*Explanation*
keyword search	text ads on search engine result pages
banner ads	graphical ads on individual websites
classifieds	ads in classified directories
sponsorships	website sponsoring, cause marketing
rich media	interactive multimedia ads
e-mail	electronic-mail, newsletter ads
slotting fees	promotional aid in e-commerce
interstitials	ad presented before access to content
referrals	commissions, word-of-mouth

Text ads, commonly associated with keyword search although present also in many content sites, are short and simple advertisement containing typically only a few lines of text – e.g. in Google AdWords, the length of a text ad is limited to four lines, so that the first line contains the ad's title (limited to 25 characters), second and third are for the copy text (max. 35 characters), and the last line displays a link to the advertiser's website, i.e. the destination URL (Gabbard 2009). Other formats may also have restrictions, e.g. relating to pixel-sizes of banner ads (see e.g. IAB 2009b) but in general the quality of text ads is more controlled, as will be discussed in Chapter 3.2.2.

Of the different formats, banners have been losing popularity among advertisers due to low performance (see e.g. Häring 2005, 6) and banner blindness (see e.g. Burke, Hornof, Nilsen & Gorman 2005), whereas keyword advertising has become the leading format following the success of Google (Li et al. 2004, 19), generating currently over 40% of online advertising revenue (IAB 2008, 8). More recently, *social media optimization* has emerged in response to popularization of social media communities (e.g. blogging, Facebook, Youtube). Rich media has also improved its competitiveness due to user-centric innovations and technological development; however, most advertising revenue is currently generated by text ads instead of multimedia (IAB 2009a). The following figure presents the performance of different online ad formats.

Total – $23.4 Billion
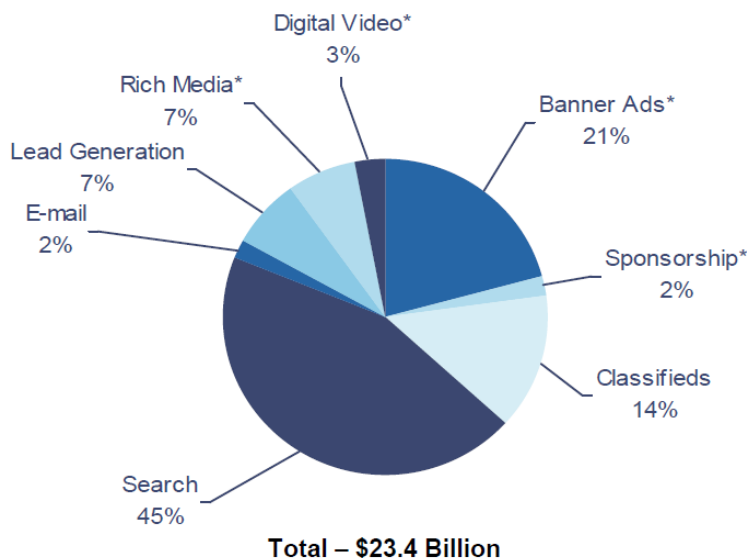
* Display Related Advertising includes Rich Media, Digital Video, Banner Ads, and Sponsorship

Figure 3   Online ad revenues by advertising format in 2008 (IAB 2009a)

The recent trend has been clearly towards search advertising, while other formats have lost popularity – compared to 2007, search won 4 percentage units from other formats whose share of revenue remained the same or slightly decreased in 2008 (IAB 2009a). Banners account for around one fifth of the online advertising revenue, while

the rest of the formats have a less significant contribution to revenue creation. E-mail advertising, for example, has a very low share of 2% – undoubtedly, the issue of spamming[8] affects negatively to the image of e-mail marketing.

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[8] Sending excessive number of unsolicited or undesired e-mail messages with a low content value.

2 ONLINE ADVERTISING CHANNEL: STRUCTURES

The supply chain is both a network and a system.
—Schary and Skjøt-Larsen

2.1 Supply chain paradigm

2.1.1 Principles of supply chains

By definition, supply chain is "a complete process for providing goods and services to final users" (Schary & Skjøt-Larsen 2001, 29), including the process of transforming raw materials into finished products (cf. marketing channel). Hence, supply chain could be defined as interfirm processes taking place before facing the customer. Supply chain can also be seen as a network of actors sharing a "sequence of connections" between different business units (Schary & Skjøt-Larsen 2001, 85). These connections emerge as activities which are "the commercial, technical and functions of individual firms", including such as procurement, product development, transporting and retailing (ibid.). Thus, supply chain is both a system for delivering goods to end users and network linking various actors (channel members).

The following figure illustrates the function of a traditional supply chain.
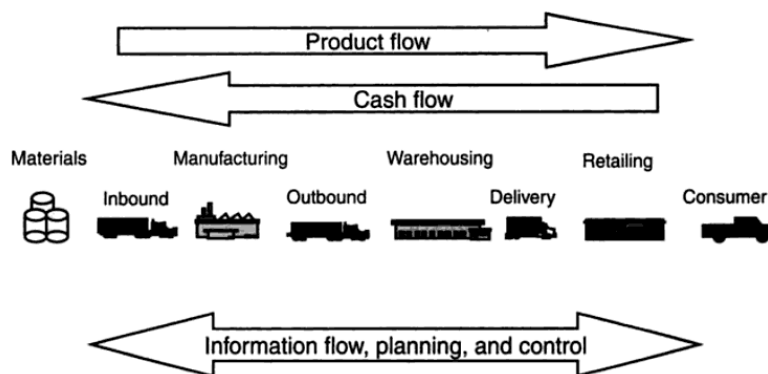
Figure 4   Basic illustration of a supply chain (Schutt 2004, 5)

As generally established, supply chains deal with a number of flows (e.g. product, cash and information in the figure). Whereas manufacturing firms concentrate on material flows, service supply chains, as Melton (2006, 263) notes, deal with flows mainly consisting of information and money. Flows have been categorized in many

ways (see e.g. Kotler 2000, 238; Rosenbloom 2003, 14; Goldkuhl 2005, 3). Also, supply chains naturally involve hierarchies, referring to the structure of the chain. They could be referred to as "steps" in the process of delivering the product to the end user, e.g. manufacturing, warehousing and retailing in the Figure 4. Flows are therefore objects inside the chain until they reach their final destination (the end customer). Each chain member has his specific role to play; generally, chains operate hierarchically so that every member produces additional value to the total functionality of the chain.

Following Krastev (2008, 2), goals of supply chains include improving performance, business processes and knowledge through focusing on innovative ways and new opportunities that increase competitiveness, effectiveness, efficiency, quality, and customer satisfaction. To obtain these goals, supply chain will need to be actively managed through the discipline of *supply chain management*[9] (SCM). This set of activities is aimed at designing and controlling the supply chain processes, including the elements of (1) cooperation and shared objectives, (2) coordination (e.g. technological integration), and (3) joint planning which involves decisions about shared investments and assets (Rangaraj 2007). Another way to describe chain functionality is to see chain members as partners who operate together in order to maximize overall performance of the chain, as oppose to each optimizing his own share. The ideology is that by cooperating, the chain's overall profit increases ("cake becomes larger") and as a result, the additional benefit can be shared between actors.

According to Ghosh and Fedorowicz (2008, 456), "the presence of a large number of independent members stresses the importance of coordination", relating to different business goals and resources of channel members. As firms in a network are connected with direct and indirect relations, or "exchange in one relationship is conditioned by exchange in another", they are not only affected by their own actions and those of immediate partners but also by the actions of other actors to which they have indirect connections (Jokela 2006, 34). Therefore, coordination is useful in managing risk, achieving optimal performance and maximizing the channel profitability (see e.g. Pagel 1999). Other benefits of coordination include (1) reduction in total supply chain costs and (2) increase in perceived value of the services provided (Ghosh & Fedorowicz 2008, 456). In contrast, inefficient coordination may hinder performance by increasing inventory and transportation costs, length of delivery times, levels of loss and damage, while lowering the quality of customer service (ibid.). In general, supply chains can be coordinated by a channel captain, i.e. channel leader, or by collaboration between members (these two are *administered channel systems*, see e.g. Brown & Timmins 1981, 166), or not at all, in which case each party makes independent decisions beyond

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[9] Term coined by Oliver and Webber in 1982.

common objectives – this is often referred to as a *decentralized channel*[10] (see e.g. Li & He 2006). Further, managing a supply chain extends across organizational boundaries, including planning and control over other firms (Schary & Skjøt-Larsen 2001, 29).

It is relevant to notice that terminology between supply chains and marketing channels are often used interchangeably to refer to the same idea. Channels, already briefly introduced in the introduction, can be defined as "inter-organizational systems of sellers and resellers" (Lederhaus 1984, 18). Particular channel concepts include e.g. marketing channel and distribution channel. Generally, a chain or channel refers to a network of actors who work together – in cooperation or collaboration – to achieve both mutual and individual goals. Adapted from Chaffey et al. (2006, 241), the Internet can be divided into three channels according to different functions, including (1) communication channel, (2) transaction channel, and (3) distribution channel. Communication channel refers to information exchange between sellers and buyers, with members organizing and sharing information; transaction channel relates to sales activities carried online or processing of transactions, and distribution channel is the physical exchange of goods (Chaffey et al. 2006, 241).

Schary and Skjøt-Larsen (2001) mention the concept of virtual channel, which describes a channel configuration that is highly flexible and based on casual ties between a large number of individual firms. Relationships in the virtual channel are labeled by dynamism and diversity, as parties may join and exit as they like, with little ties or constraints preventing the emergence of novel relationships. The channel is based on performing a highly specific task which may have a complicated nature but is performed relatively fast. After completing the task, the channel structure becomes dormant until the next transaction is triggered by a specific need. Concepts close to this idea are "adaptive supply networks" or "decentralized supply chains" which are seen in contrast to static or linear supply chain, powered by "multi-partner processes that are event driven, real-world aware and self-regulating" – briefly, allowing a higher degree of flexibility and response to environmental changes (Hansen 2007).

It is important to note that online advertising can be viewed as a supply chain of a particular kind, delivering advertisements from the advertisers to the end users. Basically, if online ad delivery is studied as a distribution process, we notice that advertisers correspond to suppliers, advertising firms to manufacturers, advertising networks to wholesalers, whereas individual websites can be seen as retailers that deliver the advertisement to the scattered market of website visitors (end customers). These roles will be discussed more thoroughly in Chapter 2.2.

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[10] "Decentralization" may also refer to the level of vertical integration (see e.g. Hansen 2007).

2.1.2   Value creation

Value is a relevant concept when examining supply chains, for supply chains operate in a "series of value-adding dyadic interfirm relationships" (Melton 2006, 263). Further, as stated by Schary and Skjøt-Larsen (2001, 64), "the purpose of the supply chain is to create value". Value can be seen as a result of those activities that "make the final product worth more to final customer" (Schary & Skjøt-Larsen 2001, 63). Zeithaml (1988, 13) defines customer value as a trade-off between benefits and sacrifices in a market exchange. Therefore, value creation is either reducing costs (sacrifices) or increasing benefits. Consistently with this idea, the value of channel relationship for a member firm can be defined as the "sum of total benefits derived from a channel partnership, less the cost associated with the partnership" (Tuominen 2004, 179). The created value is based on each channel member's work – together they form the overall value created in the chain (Tuominen 2004, 180).

According to Porter (1985, 33–45), the value chain is a set of activities the firm performs in order to create and distribute its goods and services, consisting of direct activities such as procurement and production, and indirect activities such as human resources and finance. The traditional value chain is depicted below.
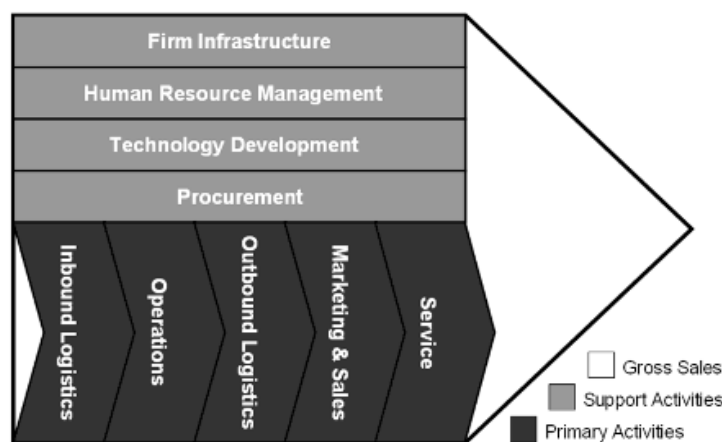
Figure 5   Porter's traditional value chain (Value Chain Forum 2009)

Each of these activities adds some value to the final product – hence, improving the effectiveness of the value chain activities also increases the competitiveness of the firm (Porter 1985, 34). Together the embedded value chains of firms in a supply chain constitute a *value system* (ibid.), also known as value network (e.g. Chaffey et al. 2006, 51). Additionally, it should be noted that "supply chain" and "value chain" are often used to refer to the same concept (Foster 2007, 96). When value chains between firms are examined as one entity, they form a value network which constitutes one, inter-organizational, value chain. The overall goal of this chain is "to create in sum a higher

value than each channel partner could create on its own" (Wagner & Lindemann 2008, 544). As argued by Schary and Skjøt-Larsen (2001, 63), management efforts should focus on the operational effectiveness of the whole chain (value system) rather than the performance of individual firms.

Further, two types of value in an exchange relationship can be identified, namely (1) economic value and (2) relational value (see e.g. Tuominen 2004, 180). Economic value is to fulfill economic objectives with minimum transaction costs, whereas relational value refers to a more abstract "satisfaction with the relationship relative to other alternatives" (ibid.). It refers to intangible goodwill between parties, and the logic is that relationships itself are valuable assets for firms.

As it can be deducted, the notion of value in the supply chain context somewhat differs from the concept of *economic value added*, calculated in "total net profit expressed in money" (Schary & Skjøt-Larsen 2001, 64). In contrast, the following equation presents the calculative basis for value creation in distribution channel (Chaffey et al. 2006, 50):

$$V = \left(B_a - C_a\right) + \left(B_i - C_i\right), \qquad\qquad (2.1)$$

in which V equals value; B_a benefit of each value chain (VC) activity; C_a cost of each VC activity; B_i benefit of each interface between VC activities; and C_i cost of each interface between VC activities (Chaffey et al. 2006, 50). The equation follows the idea that increased value creation is the outcome of either reducing cost or increasing benefits. This can take place within each value chain activity such as procurement, manufacturing, sales and distribution; or at the interface between these activities, arising to e.g. benefits of interfirm collaboration or increased economies of scale (ibid.).

Two processes are central when discussing value creation, namely (1) creation of customer value, which is executed for example by innovating, producing and delivering products to the market; and (2) appropriation of value in the marketplace, which translates to firms' profit extraction (Tuominen 2004, 180). Value creation alone, Tuominen (2004, 180) argues, is "insufficient to achieve a competitive advantage and financial success", and therefore, "firms that do not have an ability to restrict competitive forces are unable to appropriate the value they have created". In other words, the realized market value (e.g. price) is a compromise between competitive factors and maximal profit. Also, sharing of economic value among the channel members is an important question. Wagner and Lindemann (2008, 544) even go as far as to say that "sharing has to be regarded as the *raison d'être* of channel relationships along with the collaborative creation of value". It is logical to assume that, once created, sharing value-related benefits becomes a crucial issue, especially since several actors participate in the common value creation process.

2.1.3   Typology of online advertising channel

This chapter will present a basic model for online advertising value network – i.e. an extended value network for distributing online advertising. At a general level, online channel structures may decrease the level of manual intervention, equal to streamlined value chains which will help firms to achieve cost reductions and improved performance (Prabhaker 2000, 159). Online value may also result from gathering, organizing, selecting, synthesizing, and distributing information (Rayport & Sviokla 1996, 23). As stated by Chaffey et al. (2006, 50), "understanding how Internet technologies can be used to process, transfer and share marketing-related information is vital to help Internet marketers evaluate and revise value chain activities."

More precisely, in the online advertising channel, value stems from such activities that increase benefits or reduce costs by enhancing ad creation, presentation and distribution in the channel, promoting flow of information and reducing transaction costs at the interfaces between actors. These include e.g.:

Table 2   Value-adding activities in online advertising

Value-adding activity	Interface[11]	Provider
Mediation of transactions	Distribution	Intermediary
Centralized ad serving	Distribution	Intermediary
Knowledge and ability to reach niches	Distribution	Publisher
Ad placement	Customer	Publisher
Ad targeting	Customer	Intermediary/publisher
Use of different ad formats and sizes	Customer	Publisher

Mediating transactions is critical in e.g. guaranteeing efficient flows between exchange partners and sustaining their relationships. Intermediaries create value in many ways, e.g. by reducing transaction-related costs, increasing trust and coordinating channel flows such as creative material, payments, and information. This involves providing infrastructure and platforms facilitating exchange – centralized ad serving is one example of these, which, besides facilitating coordination of ad delivery, also offers ad targeting possibilities. Overall, the role of intermediaries will be covered throughout the thesis, especially in Chapters 2.3 and 3.1.

Ad targeting is an automated ad delivery method that can be based on e.g. behavioral, geographic, or semantic factors (i.e. contextuality[12]). Other drivers may be demographics, device platform and manual targeting (Google 2009b). In general,

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[11] Interface modes are "customer" and "distribution", referring to activities visible to end users and those that are hidden in the ad distribution process.
[12] Matching ads with content based on semantic similarity or other contextual factors.

targeting is positively associated with advertising performance, relating to ads' greater relevance for website visitors (see e.g. Ghose & Yang 2008a, 2008b). In other words, targeting enables advertisers to deliver customized advertisements matching each user's particular interest and tastes. As a result, it may reduce wasted impressions by "only delivering ads to interested persons or those in the right target audience", increasing both interest and response (Zeff & Aronson 1999, 133–134). Additionally, the customer does not consider advertising as a distraction when it contains information he is interested in (Zeff & Aronson 1999, 134). In particular, keyword advertising that is based on customers' own search queries is considered "far less intrusive than online banner advertisements or pop-ups" (Ghose & Yang 2007, 3).

Third, publishers are able to reach different focus groups, varying from highly specific niches to mass audiences. This not only increases advertisers' reach, but also allows the publisher to target directly specific groups of customers. However, it is critical that the ad be placed correctly on the website, so that it may be noticed by the audience and encourages action (Chaffey et al. 2006, 395). This may involve the use of different ad formats and sizes to improve the ad's visibility and attractiveness.

The model displayed below represents a typical online advertising channel, which can be defined as a mediated distribution structure used by the advertiser to deliver advertisements to end customers in the online advertising market.
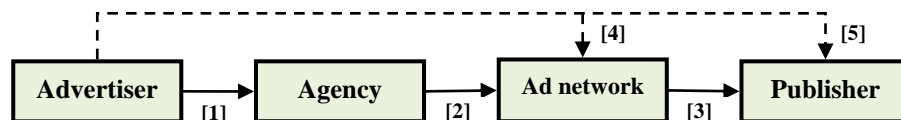
Figure 6   Typical value chain of online advertising (adapted from MTM London 2008, 10)

In a basic sense, advertiser is the initiating source of value operations. However, end users are, in a sense, directing channel development because all advertising is created for them. The customer power is used indirectly based on ads' performance feedback analyzed by advertiser and publisher alike, and used to refine parties' activities. As stated by Animesh, Ramachandran and Viswanathan (2005, 9): "Since consumer search strategies drive advertisers' strategies […], any systematic differences in consumer search (information seeking) strategies are likely to be reflected in advertisers' strategies as well." Thus, the channel exists to add value both to (1) end customers pursued by the advertiser, and to (2) the ad distribution process. Ideally, this advertising value will transform into economic value in the long term, which is the ultimate motive of advertising. Thus, the advertiser's goals relate to his marketing strategy. Other members' objectives are derived from this.

Commonly, advertisers will delegate the campaign management to an agency

(denoted by 1). "Agency" refers to the use of media or advertising agency that is responsible for formulating the advertising message based on an assignment from the advertiser, as well as for designing and planning the campaign (if not done by advertiser). The agency will use its creative skills and focus group expertise to add value to the product, and establish a connection with an ad distribution network [2].

The ad network (e.g. Google, TradeDoubler[13]) then delivers the ad to the publisher [3]. As such, they will provide a support service comparable to logistics, but they will not affect the ad's appearances. Publisher is the "retailer" who will use his expertise to target the ad to the right type of users. His specialization can be either towards mass audiences or individual niches – depending on the scale of the website, varying from individual blogs to mass portals. Finally, each actor will have his internal processes that enhance value creation inside the firm, as explained earlier. In particular, serving of ads can be divided into macro-management of the network (e.g. ad distribution) and micro-management of publishers, consisting of e.g. final ad placement on the website.

It is important to notice that this setting of online advertising channel does not cover all firms or scenarios of ad supply. For instance, it is possible that the advertiser creates the ad without an agency and then provides it to the network [4] or directly to the publishing website [5] – not eliminating the value chain activities, but managing them solo[14]. Suppose that the exchange between the advertiser and publisher is mediated only by the network [4]. The standard setting of interaction between advertisers and publishers would then include the following stages (following Metwally, Agrawal & Abbadi 2005, 12). First, the advertiser provides the advertisement to the publisher via the third party mediator. Then, the advertiser and the publisher agree on the payment basis which can be, for instance, clicking an advertisement (CPC), filling out a form (CPA), or making a purchase (CPA). Again, the contract is mediated by the network. The publisher then displays the provided ad material, such as banner or text advertisements, on his website. When a user clicks on a link on the publisher's website, he will be transferred to the network's server where the click is logged and the user is transferred to the advertiser's website. The publisher may employ a tracking code to follow the volume of traffic redirected to the advertiser's website. Similarly, the traffic generated by the publisher may be logged by the advertiser. Conflicts between the advertiser and the publisher will be resolved by the network which is also responsible for paying the performance-based commissions. (Metwally et al. 2005, 12.)

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[13] A comprehensive list of online ad networks can be found at http://www.vaughns-1-pagers.com/internet/internet-ad-networks.htm.

[14] As noted by Stern and El-Ansary (1982, 120): "It is possible to eliminate the wholesaler […] but is impossible to eliminate his functions."

2.2   Roles in online advertising channel

2.2.1   Key actors

2.2.1.1   Advertisers

Advertiser's role was discussed in the previous chapter – essentially, advertiser can be seen as the leading channel member since he is the source of revenue for other members and all activities are subjected to his goals. However, this position may be delegated to the ad network that is specialized in coordinating the ad distribution process. Advertisers differ by the size of their advertising budgets, the type of traffic they pursue through online ads, the quality of their campaigns, and their correspondence to particular demographics (Mungamuru & Weis 2008, 187).

In general, there are two types of value that the advertisers seek, namely *attention* and *conversion*; the former relating especially to brand goals such as improved brand recognition, and the latter to converting visitors into buying customers (Mahdian, Tomak & Xia 2003, 551). Attention is the prospect of receiving publicity and impressions. Because attention is difficult to measure, and also hindered by the effect of banner blindness, advertisers will need to use proxies for attention, such as impression rate, click-through rate, or even eye-tracking analysis to assess the effective reach and impact (ibid.). Conversion, in turn, refers most commonly to visitors of a website placing an order – thus, it is sometimes referred to as "customer acquisition" (Mungamuru & Weiss 2008, 188). However, there are other types of conversion besides purchase conversion, e.g. customer subscribing to a newsletter, registering to the website, making a reservation or filling in a contact form (see e.g. Kiritchenko & Jiline 2008, 123). Thus, conversion can be any pre-defined action performed by the website visitor that the advertiser and the publisher (or the network) have agreed upon.

2.2.1.2   Publishers

Publishers, also known as "content providers" or simply "media", consist of websites that host the advertisements – in other words, offer advertising space for sale. Publishers create online content (i.e. websites) to attract visitors and display advertisements (Mungamuru & Weiss 2008, 188). Their role is to provide visibility and traffic to the

advertiser, either directly or through a network. This task relates mainly to the volume of traffic they generate, the nature and quality of their content, and the demographics as well as interests of the website users (Mungamuru & Weis 2008, 187).

Based on the previous factors, feasibility of different websites for advertisers differs remarkably. This can be seen in the competition for advertising revenue, but also in the so-called inventory paradox which causes prices to go up on a popular website. As explained by Morgan Stanley (1996, ix), the highest traffic sites have a limited amount of high-traffic inventory; this will keep CPM prices high on these sites, while the "less desired" inventory will retain the aggregated CPMs at a lower level. In other words, the unused inventory available that nobody is willing to purchase lowers the average price for advertising space. The rationale, as noted, lies in the high traffic variance.

Individual websites are counted in billions. Zeff and Aronson (1999, 216) classify websites into four types: (1) well-branded sites that are highly recognizable, (2) high traffic sites with less or non-recognizable brand names, (3) niche sites with low traffic, and (4) hobby and personal sites. Following partly this definition, another classification is presented here, based on the generated amount of traffic, particularly relevant from the advertising perspective. These classified types are:

a.   *low-traffic websites*
b.   *medium-traffic websites*
c.   *high-traffic websites*
d.   *closed websites*.

Low-traffic websites are private sites not designed to attract mass audiences. Typically, they generate little traffic and are often referred to as "hobby sites". Medium-traffic sites generate more traffic than these private sites, e.g. by providing a blog to attract frequent visitors. Their search engine ranking is regularly higher than for low traffic sites with little inbound links. Goldschmidt Junghagen and Harris (2004, 51) refer to them as vertical sites, specialized in a specific topic or niche and attracting a highly focused audience. They "reach into markets where the advertiser cannot or does not want to go or not even know that it existed at all." (Cumbrowski 2008).

High-traffic sites, then again, are for example communities, news sites or portals that are created to attract advertisers and have an earning logic at least partially based on advertising revenue. These are mass media websites and mainstream portals that offer high amounts of traffic and impressions. Finally, closed sites are sites of firms that are dedicated to other purposes instead of advertising, e.g. company support sites that are not open for external advertising, but may still attract high volumes of traffic.

2.2.1.3 Traffic

The concept of traffic refers to masses. It is the ensemble of visitors (i.e. users, leads or customers) that a website attracts within a specific time period. Essentially, visitors of the website are the ones who form the marketing audience and, thus, vital to the channel. Chaffey et al. (2006, 183) identify following parts of visitor lifecycle:

a. *first-time visitors*
b. *return visitors*
c. *registered visitors* (newly or established)
d. *purchased* (once or n times/inactive/active)

This classification may be reduced down to loyal (repetitive) and non-loyal visitors based on the frequency of visits, or to purchased and non-purchased using conversion as the dividing factor. Evidently, visitors can be classified in many ways by applying different traffic, demographic or other type of data.

Acquiring traffic is of top priority to the media since because their revenue is dependent on that. Traffic acquisition can be defined as any systematic or planned method used to gather traffic from various sources. These sources can be for example advertising networks, link exchange services, social networking services, or search engines (Benediktova & Nevosad 2008). Traffic building, on the other hand, is a process of gradually increasing the volume traffic by applying a variety of on-page and off-page methods, e.g. improving website quality, increasing visibility on other websites, or search engine optimization. It is important to notice that also the media is acquiring traffic for cost, and then selling it forward after adding a premium.

Generally, intermediaries are responsible for the coordination of traffic, including aggregating and coordinating traffic flows within the online advertising channel. They receive incoming traffic from direct contacts, redirecting it to other channel members. Intermediaries also incorporate follow-up and report mechanisms to analyze the traffic flow. The purpose of analysis is e.g. to improve the website's performance, obtain valuable market information or choose a suitable advertising vehicle.

2.2.1.4 Cybermediaries

Generally, intermediaries are responsible for the coordination of traffic, including aggregating and coordinating traffic flows within the online advertising channel. They receive incoming traffic from direct contacts, and redirect it to other channel members. Intermediaries also incorporate follow-up and report mechanisms to analyze the traffic flow. The purpose of analysis is e.g. to improve the website's performance, obtain valuable market information or support actors' decision making.

Online intermediaries are sometimes referred to as *cybermediaries* (e.g. Sarkar, Butler & Seinfield 1998) or *infomediaries* (e.g. Wood 2001). According to Benediktova and Nevosad (2008, 2), cybermediaries offer following services:

Table 3   Tasks of cybermediaries (Benediktova & Nevosad 2008, 2)

Consumer services	*Business services*
a. Searching and evaluating information	a. Disseminating product information
b. Matching needs with products	b. Influencing purchase decisions
c. Reducing customer's risk	c. Reducing firm's risk
d. Offering product descriptions	d. Providing customer information

According to Choi, Whinston and Stahl (1997, 280), "the primary function – and added value – of an information intermediary is in enhancing the precision and accuracy of the information collected". In other words, they store and process information for the end customer (cf. data mining). Thereby, users can access information with minimal effort by benefiting from the expertise, experience and technical ability of these "information brokers" (Choi et al. 1997, 280). Generally, online intermediaries "are better able to evaluate the information and can offer a greater reliability to consumers as one advantage of using their service rather than searching themselves" (ibid.). The benefits associated with intermediaries are discussed in depth at Chapter 2.3.

In particular, two types of intermediaries specialized in managing traffic flows, namely portals and search engines, are discussed here. First, portals act as traffic hubs, redirecting users to destination websites, as demonstrated below.
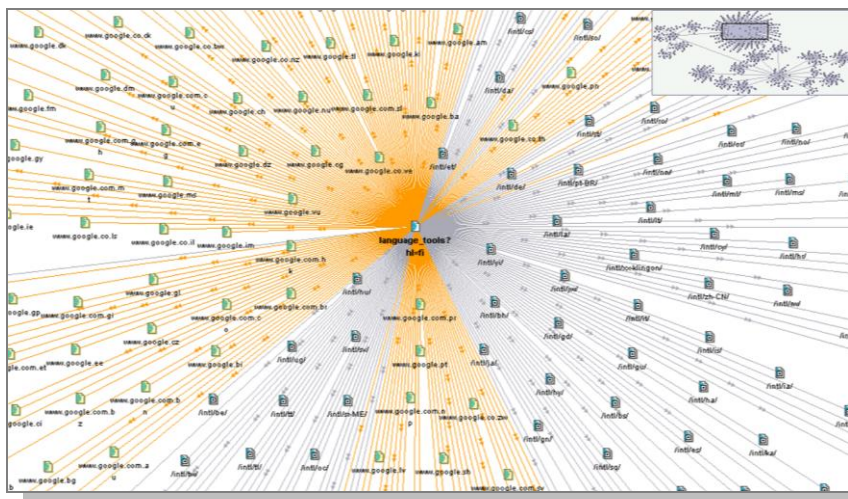
Figure 7   Link space exhibit: first 1,000 links from Google.fi[15]

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[15] Screen-captured by using Funnel Web Profiler 2.0.

It is evident that portals have the potential to reach a considerable amount of customers, which increases their advertising value. Moreover, information generated by portals may be used as a basis for customer intelligence. Therefore, advertisers may benefit from portals not only through increased visibility but also by acquiring data on customer profiles (Chellappa & Shivendu 2006, 9). Generally, portals classify websites into various categories based on topicalities, but there are many types of portals. Those identified by Chaffey et al. (2006, 90) include:

Table 4   Portal types (Chaffey et al. 2006, 90)

Portal type	Description
Access portals	associated commonly with Internet service providers (ISPs)
Horizontal portals	covering functionalities such as directories, shopping, etc.
Vertical portals	focusing on a very particular topic
Media portals	providing news or entertainment content
Geographical portals	focusing on geographically defined regions
Marketplaces	for trading goods and services
Media type portals	focusing on delivering content in specific media formats
Search portals	offering a wide scale of services related to searching

Search engines can be classified as a special type of portals. Most typically, search engines operate so that a user submits a query (or string) on the search engine's website or through other interface; this query consists of keywords typed into a search box[16]. After submitting the query, the search engine will find matching websites and rank them into an order of relevance (see e.g. Brin & Page 1998). From an advertising perspective, the opportunity of attracting the customer's attention is included in the query, because customers directly give away their potential interest-points, allowing advertisers to target these needs (Misra et al. 2006, 4–5). Thus, search engines act as both gatekeepers and intermediaries between firms and customers. Based on precise information on consumer preferences, advertisers may be able to minimize the gap between advertising (a form of advertiser-initiated information transfer) and searches, in which the information transfer initiated by the consumer (Choi et al. 1997, 360).

In the online advertising channel, intermediaries offer "targeted online advertising placement and scheduling services for both advertisers and providers" (Subirana & Wright 2007, 38). Advertising services offered by search engines consists of ad programs and networks. For example, Google offers a program for advertisers, called AdWords, and a program for content providers, called AdSense. Under this setting, a firm pays for a text advertisement to be presented next to the organic search results (in

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[16] Besides individual words, it may include phrases and search operators such as "AND", OR", or "|".

the search network), or in publisher sites taking part in the AdSense program (the content network). The competing programs of Yahoo! and Microsoft are, respectively, Search Marketing (formerly known as Overture[17]) and adCenter. Together, these three firms dominate both search and keyword advertising industry (Jansen et al. 2008). In 2008, Google's revenues amounted to $21.7 billion, and more than 90% of this revenue originated from text advertising (Google Investor Relations 2009).

The following table depicts the market structure of ad networks.

Table 5   Ad server market structure (Attributor 2008)

Vendor	Visitors	Market share[18]	Domains	Market share
Google	1,107	35.3	91,462	78.2
DoubleClick	1,079	34.4	6,748	5.8
Yahoo!	362	11.5	5,147	4.4
MSN	309	9.9	8,099	6.9
AOL	156	5.0	1,976	1.7
Adbrite	73	2.3	3,575	3.1
Total	3,086 (M)	100 (%)	117,007	100 (%)

It can be noticed that Google has a superior advertising reach, especially after the firm's acquisition of DoubleClick in 2008 (Google Blog 2008a). Based on these figures from 2007, Google's market share, with DoubleClick included, would be over 70 percent when measuring monthly unique visitors. When measuring unique domains included in the network, Google's market share is even higher and rises to exceed 80%. The comparison of market information, however, is somewhat hindered by lack of precise industry data and the fact that the market share can be calculated by measuring the number of individual users exposed to ads (visitors) or websites participating in the network (unique domains). Additionally, the PPC market figures claim a market share of rough 80 percent for Google, which is more or less equal to the company's network share – this confirms that the network is actively used by advertisers and generates the majority of the industry's pay-per-click revenues (Rimm-Kaufman Group 2009).

However, it is relevant to notice that the paid search market and online advertising market as a whole are two different markets, i.e. paid search market share does not equal to online advertising market share – although both markets are dominated by search engines at the moment, relating to the fact that search advertising generates the majority share (over 40%) of online advertising revenue (refer to Chapter 1.2.3).

Additionally, it should be noted that many smaller networks have been left out of this comparison, although their impact on market shares is likely to be small. Nevertheless, it is inarguable that Google has both the "head and tail" (Attributor 2008) of online advertising, meaning that it offers the widest reach by measuring both ad impressions

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[17] Yahoo! acquired Overture in 2003 (Jansen et al. 2008).
[18] Based on non-rounded figures of visitors.

and individual websites (display inventory) included in its ad network. It can also be argued that Google's network is more advanced than typical advertising networks (i.e. more advanced algorithms and more ad formats available), although all modern online advertising networks share the same principles. The structure of Google's network is illustrated in the following figure.
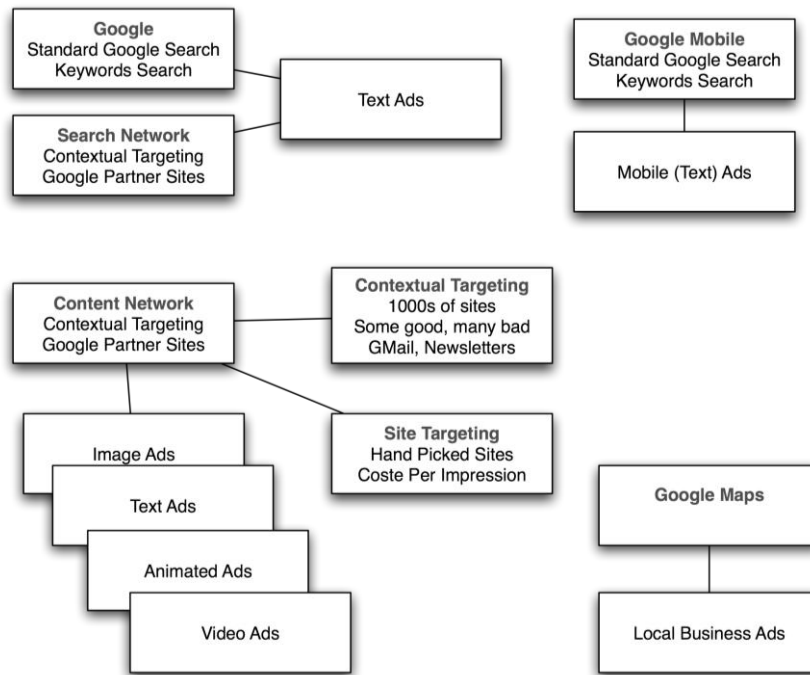
Figure 8   Google's advertising network (Hardington Consultacy 2007)

The figure demonstrates the design of Google's aggregated network and the relations to different ad formats. Google uses two primary networks to distribute advertising: (1) *the search network* and (2) *the content network*. Ads delivered via search network are in text format and are presented on search engine result pages (SERPs) in relation with search queries. The content network consists of "millions of Web sites in more than 100 countries and 20 languages" (Jansen et al. 2008). Google cooperates with both so-called high-profile partners and low profile partners, divided by their ability to generate traffic – high profiles include sites generating substantial traffic, while the average websites make up low the profile partners (ibid.). Additionally, there are several other platforms for delivering ads in various formats – e.g, Google offers an affiliate program called Google affiliate network, although momentarily only in the US (Google 2009a).

Besides competing against one another, search engines may work in collaboration. This settlement is referred to as arbitrage, and it consists of networks sharing ads and dividing the revenue according to performance or other agreement. For example, the Google–Yahoo! arbitrage agreement would have enabled Yahoo! to distribute Google's text ads across its own advertising network. However, this agreement was cancelled due

to the threats made by US department of justice to bring an anti-trust case against Google should the agreement take place (Google Blog 2008b). Google still has many arbitrage agreements with other websites (see e.g. Jansen et al. 2008).

Boughton (2005, 31) argues that search engines are forced to increase supply in order to increase their revenue, because there are a finite number of possible keywords they can sell. However, the relevance of this argument can be contested by applying the concepts of *long-tailing* and *broad match*. Even if the amount of individual words is finite, the combination of words – i.e. user-generated search phrases – is much closer to infinite. By applying the long-tail method to bid for a large number of relevant word combinations, advertisers may target these particular phrases instead of generic keywords. The method of broad match has an equal effect, because in this process the search engine automatically links a purchased keyword with a closely matching search term, and serves the advertisement. Broad match is commonly based on the word's conjugation or semantic similarity and, as explained, factored by the search engine's algorithm. As such, it can be argued that customers create the demand for ads by performing searches while advertisers create the supply by creating ads and bidding on keywords. Finally, because the keywords are sold in a continuous auction, their prices are likely to increase if the competition between advertisers increases – this will, in fact, increase the search engines' revenue. Positive network externalities will also favor the increase of competition, as more advertisers and customers are drawn into the network's reach. This effect is based on obtaining a critical mass, or the number of advertisers and publishers needed to trigger the process of progressive growth[19].

2.2.2   Role classifications

Next, we will discuss the roles taking place in the online advertising channel, and what are the linkages between them. Understanding roles is crucial for the research purpose, as they relate closely to channel structures and activities, while also determining firms' relative position in the channel. For instance, a firm in the role of a "manufacturer" is subjected to different expectations, duties and possibilities than that of a "supplier". Essentially, roles define the expected functions of a channel member when he has adapted a certain role and thus under the influence of particular *role liabilities*. This thinking is similar to "role sets" that are "self-perceived and other-attributed role prescriptions that are determined by the norms, values and commonly shared idealized expectations of the entire channel group" (Robicheaux & El-Ansary 1975, 17).

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[19] This mechanism is commonly associated with the snowball effect (see e.g. http://en.wikipedia.org/wiki/Critical_mass_(sociodynamics)).

Another important point is noted by Sheu and Hu[20] (2008, 21): "The more the source member performs its role (e.g., the higher the quality of its assistances to the target member), the better the target member is able to achieve a higher level of performance." This means that a firm in the role of a channel leader, in particular, needs to be concerned about other members' performance to ensure achievement of channel objectives. Because the captain's influence is greater in the channel, so is his motivational impact on firms in other roles. Additionally, as stressed by Sheu and Hu (2008, 21), if the source member's (captain's) own role performance is perceived as satisfactory, the target member tends to be motivated to maintain the channel relationship. As a conclusion, understanding different roles is important because the benefit of one channel member is connected to the benefit of others.

Generally, channel roles are based on division of tasks (labor) and specialization of each member (Lederhaus 1984, 19). The idea of specialization is well founded in the economics, originally established by Adam Smith in 1776 who claimed that specialization results from "enhanced levels of skill as experience accumulates" (Ricketts & Elgar 2002, 136[21]); and further conceptualized for example by Bates and Bacon in 1972 as a "necessity for exchange" (Lederhaus 1984, 30[22]). Various activities are divided into basic components that are divided between channel members, reducing "the time which would otherwise be spent transferring attention from one job to the next" (Ricketts et al. 2002, 136). Furthermore, channel members are dependent on each other's capabilities of performing specialized tasks; otherwise, it would be impossible to reach the end customer and the channel system would fail its purpose (Robicheaux & El-Ansary 1975, 15). To ensure commitment, the division of tasks is based on mutual agreement which can be explicit or implicit, referred to as boundary of operations (Freedman 1994, 15–16) as long as partners are willing to cooperate in the value chain. In spite of voluntarism in selection of roles, the role position will accurately define the behavior required from a channel member, so that other channel occupants both expect and predict the actions of a channel member based on division of labor (Robicheaux et al. 1975, 18). In other words, there exist certain role liabilities based on task division.

As noted, roles are relative positions responsible for specific actions in a supply chain. They crystallize in the form of dealers, suppliers, manufacturers, agents and so on. Following the traditional supply chain paradigm, four basic roles are possible to identify, namely those of (1) supplier, (2) manufacturer, (3) distributor and (4) retailer.

In the most basic sense, supplier provides the manufacturer with raw material or

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[20] Original source: Sibley, S. D. – Michie D. A. (1981) Distribution performance and power sources. Industrial Marketing Management, Vol. 10, 59−65.
[21] Original source: Smith, A. (1925) The Wealth of Nations. Ed. by Cannan, E. Methuen and Co: London.
[22] Original source: Bates, F. L. – Bacon, L. (1972) The community as a social system. Social Forces, Vol. 50, No: 3, 371–379.

components, after which the manufacturer assembles or otherwise constructs the sellable product. The distributor or wholesaler then delivers the product to a network of resellers or agents, so that customers scattered to different geographical markets are able to purchase the product. Each chain member specializes in a set of particular tasks, such as predicting customer needs, organizing logistic coordination and transportation, managing materials, manufacturing and so forth. When approaching the online advertising industry from a supply chain perspective, it can be noticed that there are similarities to the traditional supply chain. The following table demonstrates a typical case of role division in the online advertising channel.

Table 6   Roles in the online advertising channel: distribution perspective

Role offline	*Role online*	*Explanation*
Supplier	Advertising agency	Delivering creative components, "tailored manufacturing"
Manufacturer	Advertiser	Coordination of manufacturing, outsourcing
Distributor	Advertising network	Supplying ads from inventory to distributors
Retailer	Individual websites (media)	Operations in customer interface
Customers	Traffic (website visitors)	"Purchasing" the final product

The manufacturer (advertiser) and the supplier (advertising firm) work in cooperation to produce the advertisement (e.g. banner or text ad). The finished product is then delivered to the distributor (advertising network) who disseminates it across the network to individual retailers (websites). Therefore, the "manufacturer" will obtain such a reach for the product that would otherwise be impossible. Eventually, the advertisement will obtain exposure among website visitors who will "purchase" the product by either viewing it or clicking on it.

From an exchange perspective, referring to transaction between parties, three basic roles in online advertising can be identified:

- *seller* = publisher
- *buyer* = advertiser
- *intermediary* = ad network.

This model is very simple but accurate in terms of basic role functions required in completing transactions in almost every type of commercial environment. Sellers sell advertising space, including impressions, clicks and traffic (refer to Chapter 3.3). Buyers are those who are willing to acquire these products, commonly advertisers, sometimes brokers or other types of agents. The exchange is determined by negotiations between these parties – however, the intermediating function is crucial in the dispersed online market, which affects greatly the relationships between parties. Thus, the advertising network has an important role in exchange between buyers and sellers.

By combining the two previously presented role classifications, another way of categorizing roles can be devised, depicted in the following:
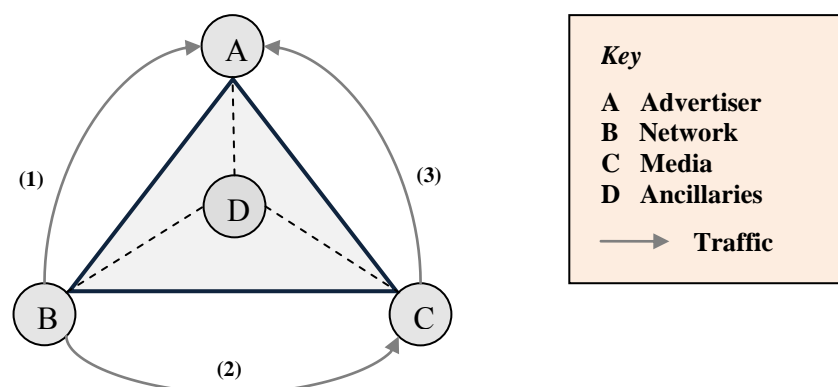
Figure 9   Role diamond of online advertising

The diamond categorization of roles emphasizes the fact that the end customers (denoted by D) are in central focus for channel members and, therefore, also influence their mutual roles. End customers, in fact, have direct contacts to all channel members, including advertisers, publishers and the network. As traffic (i.e. visitors) is a resource desired by advertisers, other channel members will direct them towards the advertiser – more precisely, the network channels traffic directly to the advertiser (1), and to the content provider (2) from which the traffic is redirected to the advertiser's website through advertisement hyperlinks (3). Thus, the advertiser is able to acquire traffic simultaneously from many sources.

The network is acting as a distributor when it holds an ad inventory from which the ads are supplied to the media website – in contrast, it is embodied in the role of a mediator when it acts between buyers and sellers, or advertisers and media, in a mediating function (e.g. by creating a marketplace such as keyword auction). Thus, the network's ambitions are towards both advertisers and content providers. First, it offers services to advertisers who are the origin of advertising revenue that the network is dependent on; second, the network acts in contact with the media, comprising of individual sites amounting to several millions. As a result, it has to balance demand and supply but also the conflicting needs of buyers (advertisers) and sellers (media) of advertising space. This will be discussed further in Chapter 4.3.

Each actor has ties to ancillary structures (cf. Rosenbloom 2003, 24), i.e. parties that are not directly involved in exchange but facilitate business operations by providing infrastructure or support, or are otherwise relevant. These include mainly advertising agencies, found in the first classification but not a part of the channel structure in this model, and, most importantly, end customers as the target of all advertising, and also as a mass resource under the appellation of "traffic".

The advertiser is in the role of customer when serviced by other channel members, and in the role of manufacturer when distributing ads. Consequently, ad delivery can be examined both as a service process and a supply process. The role analogies and their connections to supply chain theories depend, therefore, on the applied perception of relationship structures in the channel – in other words, implications of actors may deviate based on the role assumed. Partially, the difference is the same when putting value networks and the "pure" supply chain ideology in comparison. This can be further elaborated by stating that roles are *contingent* or flexible; in other words, actors assume different roles under different market situations. For example, a publisher – advertising space seller – can adapt the role of a buyer when acquiring traffic to his site from portals which, in turn, buy and sell advertising space but also distribute traffic free of charge, and offer services for customer. Thus, actors move across channel hierarchies, even switching between competing channel structures unless facing significant switching costs or exit barriers. Essentially, the switching is made possible by the actors' potential capability to function in several roles – i.e., to assume multiple roles. Following the idea of a virtual channel (Schary & Skjøtt-Larsen 2001), roles may become dormant when not needed, and reactivated upon a specific need. This behavior facilitates the actors' adaptation to a rapidly changing (dynamic) environment.

2.3 Intermediation and importance of networks

2.3.1 *The middleman effect*

As shortly mentioned in the introduction, the role of intermediaries, or mediators, is critical in online advertising channel, similar to many other supply chains (or markets, for that matter). The importance of middlemen is widely recognized in both traditional and modern supply chain theory. Following Lederhaus' (1984, 19) statement, "many manufacturers cannot exist without intermediaries". Essentially, intermediaries are critical for taking part in the division of tasks and obtaining channel goals such as effectiveness, efficiency, growth and long-term survival (Lederhaus 1984, 19).

Generally, marketing middlemen are classified into three groups, which are wholesalers, retailers and facilitating intermediaries. The latter group is not directly involved in the transfer and negotiation of ownership; they may include transportation firms, warehousing firms, advertising agencies, and marketing research agencies (Mallen 1970, 51). In other words, firms will outsource non-strategic tasks to chain partners. The actors then compete on their independent markets, or create new markets.

Basically, the middlemen must be compatible with the manufacturer's total marketing strategy, consisting of marketing mix, product mix, inventory policy, selling and promotional efforts, service quality and pricing policies (Mallen 1970, 52). Finally, the middlemen must also have the necessary financial, human, and physical resources; based on the nature of activity, these may include e.g. qualified staff, trucks and warehouses. Primarily, a mediator has contacts with a part of the total market the principal wishes to pursue which is, therefore, divided between intermediaries with varying degrees of overlap. Further, the intensity of firms' intermediary policies differs. At one end of the scale, where the manufacturer aims at distributing to a maximal number of outlets, the distribution is known as "intensive distribution". If the manufacturer contracts only one middleman in a given geographic area, the distribution is referred to as "exclusive distribution". Between the extremes, the middle ground consists of "selective distribution". Further, also the middleman has the possibility to refuse carrying a manufacturer's products; in other words, it is not evident that he is in a subordinate bargaining position towards the manufacturer. In conclusion, the depth of intermediaries' participation in the exchange varies greatly. (Mallen 1970, 52.)

According to Freedman (1994, 33), many functions are delegated only partially – while some tasks such as sales are given to intermediaries, others are retained to guarantee control over agent's behavior and own core competence. For example, direct selling may be used for large contracts or important customers as a means to guarantee high-quality service, while small accounts are delegated to resellers (ibid.). This allows the manufacturer to concentrate on high margin accounts while delegating other relationships to agents, thus optimizing the sales force effort (Freedman 1994, 34).

The effect of mediation appears in many forms; besides intermediation, relevant concepts include *disintermediation*, *reintermediation* and *countermediation* (see e.g. Chircu & Kauffman 1999). Three variations of alternative supply are presented as follows, adapted from Chaffey et al. (2006, 240).
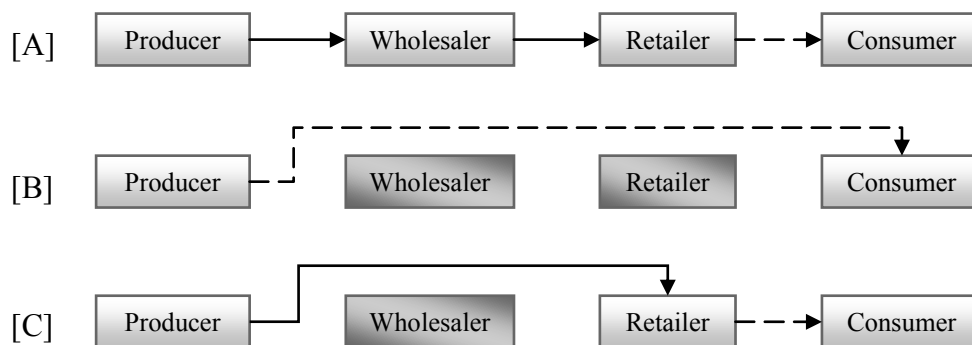
Figure 10   Three cases of mediation (A, B, C) (Chaffey et al. 2006)

The first scenario [A] describes intermediation in a typical distribution channel. Full-

fledge mediation is deployed, with producer passing goods to wholesaler, who then passes them on to the retailer and so on. Each intermediary will add his margin to the product's final price. Disintermediation [B], in turn, means removing unnecessary middlemen in the process of reaching the final customer (Chaffey et al. 2006, 54). In this case, only the costs and margin of the producer are relevant. In theory, unnecessary middlemen should be eliminated because they add to costs, thus increasing the price for the end customer and reducing the manufacturer's competitiveness. Essentially, the degree of intermediation depends on the added value – as noted by Payne and Frow (2004, 530): "Unless the intermediary is adding value to the customer relationship, it may prove to be an unnecessary cost and may be bypassed."

In the third setting [C], the chain of distribution will bypass a specific channel hierarchy. This may occur after the manufacturer realizes his inability to reach sufficient amount of customers by setting up own distribution – this reintermediation will therefore mean reintegrating some middlemen to the channel structure. However, the manufacturer may continue to use the direct route (case B) as a part of a parallel distribution schema, although this may lead to channel conflicts if agents feel their position threatened. In this case, the "neglected" parties may reorganize themselves, e.g. by establishing a competing channel that increases economies of scale and bargaining power of the newly founded channel construct (cf. countermediation, Chaffey et al. 2006, 55). Quoting Chircu and Kauffman (1999, 110): "While disintermediation may occur in the short run, the disintermediated players are very likely to fight back and reintermediate themselves." Intermediaries may also exploit new market opportunities to provide specialized services. As further explained by Nayyar (1990, 513), "service firms can develop a competitive advantage by exploiting the potential buyer's incentives to lower information acquisition costs when buying new services", referring to firm's changing information needs which create new markets. This is further elaborated in the following figure:
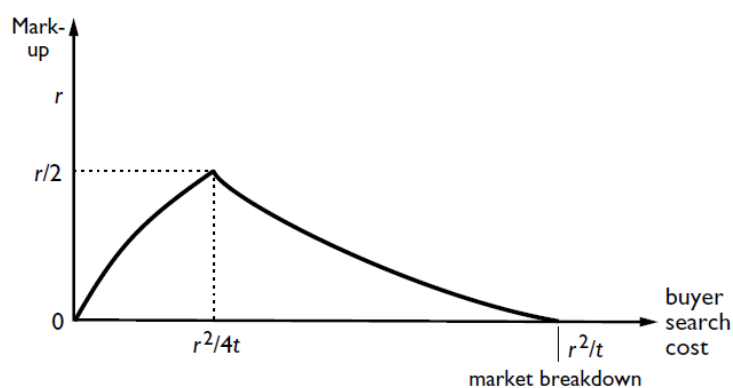
Figure 11   The effect of emerging market by reduced search costs (Bakos 1998, 40)

Bakos (1998, 40) explains the effect as follows: "As search costs fall from very high to moderate, new markets emerge, and both sellers and buyers benefit." This is because matching buyers and seller is facilitated by lower search costs – thus, it is easier for buyers and sellers to find each other, which creates additional exchange (denoted by $0…r^2/4t$). Sellers are able to transfer some of the spared search costs to product prices ($0…r/2$). Bakos (1998, 40) continues by stating that "if search costs continue to fall, market prices fall and sellers are made worse off, while buyers benefit from the lower prices and their ability to find products that fit their needs." This is because when the searching process is facilitated to a certain extent, it becomes difficult for sellers to differentiate[23] on the basis of information asymmetry – in other words, the market becomes more transparent, resulting in fiercer competition. This drives off weakest sellers until equilibrium in buyer's search cost and seller's markup is found (somewhere between $r^2/4t$ and market breakdown) (Bakos 1998, 40). In conclusion, intermediaries may not only facilitate market transactions, but also influence the market structure.

Generally, the use of middlemen is based on "their efficiency in performing basic functions of distribution" (Lederhaus 1984, 19). This relates closely to the previous discussion on roles, specialization and division of tasks (see Chapter 2.2.2). More precisely, benefits offered by intermediaries to a manufacturer comprise of (1) expertise, (2) specialization, (3) contacts and (4) scale of operation (ibid.). If the benefits of adding a middleman will justify the increase in the product price, resulting from consecutive margins, then the adding will be rational. In other words, the decision is based on value produced by middleman less cost of the adding, including the middleman's margin. Lederhaus (1984, 19–20) simplifies middleman distribution by presenting two alternative scenarios – direct contacts and mediated contacts. First, consider that four manufacturers (M) will have direct contacts to four customers (C). This will result to 16 contacts as each of the manufacturers will contact each customer separately, depicted below (Lederhaus 1984, 19):

$$\sum_{i=1}^{n} M_i C_j = 4 \times 4 = 16 \tag{2.1}$$

In contrast, by adding one middleman between manufacturers and customers, the number of contacts is decreased by half. In this case the four manufacturers will each contact only the middleman who, in turn, contacts all four customers. This is expressed in the following equation (Lederhaus 1984, 20):

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[23] Obviously, the nature of sold goods also has an impact on the seller's ability to differentiate from other sellers – if the goods are commodities, the product cannot be used as a basis of differentiation (but the seller may still reap higher markups from uninformed customers).

$$\sum_{i=1}^{n} M_i + C_j = 4 + 4 = 8 \qquad (2.2)$$

As noted by Lederhaus (1984, 20), "failure to introduce a middleman increases the number of contacts multiplicatively whereas the introduction of a middleman increases the contacts additively". The difference of contacts increases power and revenue of the middleman (Lederhaus 1984, 23), whereas the manufacturer benefits by having less individual contacts to deal with. The increased power is based on dependency; as the middleman takes over critical functions in a firm's production processes, this naturally leads to a certain dependency of the intermediary[24]

The increase in contactual efficiency is depicted in the following figure (Rosenbloom 2003, 19).
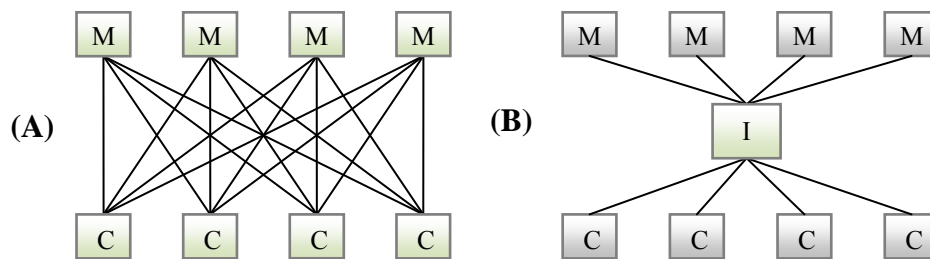
Figure 12   Example of contactual efficiency (Rosenbloom 2003, 19)

It can clearly be noticed how contacts from manufacturers (M) to customers (C) is reduced by adding an intermediary (I) when moving from case A to case B. Because additional contacts are controlled by specialized middlemen, the efficiency of managing these contacts increases and the level of redundant information decreases. This effect is particularly visible in the online environment where the number of direct contacts would be tremendous. As stated, adding the number of middlemen can be seen rational as long as the marginal cost of increasing a channel member is smaller than additional profit. Based on Lederhaus' (1984) work, middlemen represent a trade-off in which the manufacturer gives up some of his power and control in exchange for efficiency and profits arising from the division of labor. These profits may come, for example, "through control of competitive environment" (Lederhaus 1984, 29).

Besides increasing contactual efficiency, the role of mediators is critical in reducing transaction costs. These costs may arise from following externalities (Dahlman 1979, 148):

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[24] However, it may be too straight-forward to argue that the setting would allow the middleman power advantage – rather, parties are mutually dependent on each other.

- *search and information gathering* (prior to transaction)
- *bargaining and decision making* (at the time of transaction)
- *policing and enforcement* (after transaction).

Search and information costs in fact form an opportunity cost[25] of the time spent in searching appropriate partners, raw materials and such, preceding the exchange (Bakos 1997, 1677), whereas bargaining and decision-making costs occur from negotiations at the time of transaction, or time taken prior to exchange to guarantee contractual safeguards (Dahlman 1979). Finally, policing and enforcement costs relate to parties' mutual effort to ensure that the partner is respecting the contract and, if not, take legal or other course of action (ibid.). The importance of search and information gathering is further explained by Håkansson (1982, 11):

> *"The costs of making a mistake in supplier selection by using a supplier which, for example, delivers an unsatisfactory product or allows delays in delivery, can be enormous. Thus the firm has to be very sure of an alternative before it is prepared to change suppliers."*

Therefore, it is logical that the firm will take necessary precautions to reduce the contract risk, including gathering information and evaluating available alternatives. However, specialized intermediaries reduce search and information (and evaluation) costs if they have more information of the market and this information is shared with the exchange partners (Resnick, Zeckhauser & Avery 1995; Bakos 1997).

Håkansson, however, uses transaction costs as a proof of firms' willingness to form stable relationships instead of fluxing between partners (or resorting to mediating services) – by developing stable relationships, channel members may operate more efficiently than in discrete spot markets (Håkansson 1982, 11). In fact, this notion deals with vertical integration and boundaries of the firm (see e.g. Coase 1937) – in some cases, it can be seen that, due to transaction costs faced in the market, it is better for a firm to assume other firm's functions to improve operative efficiency, e.g. for a manufacturer to acquire a supplier[26]. This, in turn, relates to *double marginalization* which occurs when each channel member (production unit) adds his margin to the product within the value chain, thus creating a sequence of markups above the marginal cost of the value-adding process (see e.g. Hansen 2007). Thus, the product's price becomes higher than if there was only one firm adding its margin; resulting in loss of competitiveness. As argued by Badasyan, Goeree, Hartmann, Holt, Morgan, Rosenblat, Servatka & Yandell (2005, 2): "The sequence of mark-ups leads to a higher retail price and lower combined profit for the supply chain than would arise if the firms were

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[25] Costs of choosing one alternative over another (second best) alternative.
[26] Aside strategic issues, such as guaranteeing the sourcing of a sensitive raw material, this relates to transaction costs which are reduced when the production unit consists of only one firm (i.e. internal transaction costs are lower than external ones).

vertically integrated. Consequently, consumer surplus and industry profits rise when firms in the same supply chain merge."

This can be demonstrated by a simple example. Suppose there are four firms (A…D) that participate in the production of a product X. When the channel is decentralized, each of these firms will set a margin 10% above the marginal cost of production to make profit. This is demonstrated in the following table:

Table 7   Simplified example of double marginalization

	Firm A	*Firm B*	*Firm C*	*Firm D*	*Product price*	*Efficiency loss*
Production cost	100	100	100	100	400.00	-
Markup (10%)	10	21	33.10	46.41	-	-
Sum of markups	10	31	64.10	110.51	-	-
Middle-market price	100	110	231	364.10	510.51	70.51
One firm (10%)	-	-	-	-	440.00	0.00

The example assumes that each firm sets a fixed 10% margin that is charged over the whole value of the middle-product – in reality, this can be more or less, or calculated on entirely different basis. Thus, this example is exacerbated in a sense that not all firms in fact add their premium on top of the middle-product, so that the markup would cumulatively grow at each hierarchy level. Rather, the percentage of markup is added to their own value contribution or produce – if all firms in the example would do this, the outcome would be equal to one firm adding 10% margin[27]. However, the matter is complicated in real life and also involves ownership transfers – in cases where the manufacturer only acquires raw materials and services from the suppliers, suppliers cannot impose their margins over the total value of the product but must set their margins based on their own value contributions – however, a retailer who takes possession of the product is in better position to its margin to the entire product value, which, if percentages are equal, exceeds suppliers' amount of the product value! Indeed, in these cases consecutive markups mean that also the monetary value of margins increases throughout hierarchy levels (as visible in the table). However, since it is difficult to measure the members' added value on objective basis, and their abilities to appropriate it[28] (as noted in Chapter 2.1.2), the question of revenue sharing equity is too complex to handle in this context.

For example, markups of high-quality products may be higher than those of low-quality products due to their specific nature (e.g. luxury products), feeding the effect of rising price as sequential markups are added. Further, if high-quality products are

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[27] Calculation: 110 + 110 + 110 + 110 = 440.
[28] Relating to e.g. such matters as dependency, relative position in the channel, operational size and bargaining power.

treated differently than low-quality products within the distribution chain, this could lead to higher costs; for example, there may be a need for special packaging or transportation, or the spillage may be higher than for low-quality products. As a result, the premiums of these products need to be raised to cover additional costs. Additionally, the production costs of parties as well as their bargaining power may be different, so that some actors are unable to charge a higher margin than others e.g. due to their purchasing power or other parties' dependence – although all firms are required to charge above costs because without profit, their business is not viable in the long term.

The double marginalization also results in what is here referred to as "efficiency loss" – meaning the variation in the end product price based on different production routes. In the simplified example, one firm taking over all production activities and charging only one markup would produce and efficiency saving of 70.51.

In conclusion, it may be stated that even though adding intermediaries may be beneficial, it is important to acknowledge the other options that a firm has. In the modern network economy, a firm may have no choice but to outsource because acquiring all necessary resources would be too costly (and resources such as human capital could not be "run" full-time such as factories) and would reduce the firm's agility, defined as the ability to adapt to rapid changes in the operating environment. Like in value production, the formula in calculating is benefits less cost, although it may be necessary to make comparative calculations between scenarios of vertical integration through acquisitions and outsourcing through middlemen or strategic alliances.

Finally, as stated in relation to Coase, production costs are not the sole costs relating to production and distribution costs – rather, the role of transaction costs can be substantial. These costs must be added to the product's final price for the channel to be profitable. In practice, each firm faces transaction costs and then adds them to the middle-product price. This is another reason (besides double-marginalization) why decentralized channels may be less cost-efficient than vertically integrated channels. However, also vertically integrated channels face (internal) transaction costs (Spulber 2007, 131). It depends, therefore, on the difference of external and internal transaction costs whether the vertically integrated channel is more cost-efficient than a disintegrated one (ibid.). Also, this acts as an incentive for firms to regulate the level of integration – as written in Wikipedia (2009a): "When the external transaction costs are higher than the internal transaction costs, the company will grow. If the internal transaction costs are higher than the external transaction costs the company will be downsized by outsourcing, for example." Of course, the question of the boundaries of the firm is not as simple as that, but involves strategic and competitive issues as well[29].

In conclusion, the *middleman effect* (potential benefits associated with implementing

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[29] E.g., resolving conflicts is simpler within a firm than in a chain of actors (Håkansson 1982, 22).

intermediaries) could be defined as delegating relationship governance to another channel hierarchy level, thus (1) improving the contactual efficiency and (2) reducing transaction costs such as search and evaluation cost, contracting cost, relationship administration (or governance) cost, and monitoring cost. The benefits relate to experience, expertise and specialization of the middleman. It is important to notice the importance of information systems that reduce the effect of physical distance, increase the amount of available information and allow for creation of technological interfaces that standardize requirements for participants, thus reducing information dissemination costs and – if properly deployed – uncertainties relating to exchange. However, middleman effect also has a negative dimension, relating to a certain loss of control, double marginalization and increased transaction costs, assuming that internal efficiency exceeds that of middlemen.

2.3.2   Middleman effect in online advertising channel

As the Web was growing in importance in the 1990s, it was suggested to eventually eliminate the layers of intermediaries in the value chain between manufacturers and end customers (see e.g. Benjamin & Wigand 1995; Gellman 1996; Sahlman, Stevenson, Roberts & Bhide 1999; Conway 2000). This disintermediation would optimally lead to enormous cost savings through facilitated access to information (e.g. Chaffey et al. 2006, 54). However, this did not happen in the scale it was believed to happen – quoting Bailey and Bakos (1997, 1): "[the] disintermediation hypothesis may be only partially true: while some roles of traditional intermediaries may be diminished in electronic markets, new roles for intermediaries are emerging." This is backed by Klein and Selz (2000) who argue that "the significantly lower costs of obtaining, processing, and transmitting information and the arising (electronic) information links within and between firms spur radical changes in the way companies operate and cause the restructuring of industrial markets." The changes may result in "smaller firms, virtual organizations and complex inter-organizational structures" (Klein & Selz 2000).

   In fact, it quickly became evident that the Internet actually creates new types of intermediaries that (1) aggregate information, (2) match buyers and sellers, and (3) provide trust-enhancing services (see e.g. Bailey & Bakos 1997, 7; Sarkar et al. 1998; Benediktova & Nevosad 2008, 1). More precisely, ad networks are extremely important in mediating contacts between advertisers and publishers in the modern online advertising market. As such, it has become *fait accompli* that middlemen thrive and succeed in the fragmented online market, altering both structures and processes of exchange – quoting, Palvia and Vemuri (1999, 122):

> *Despite the well-publicized evidence of disintermediation, electronic*

> *commerce is not eliminating the need for middlemen. Electronic commerce is transforming the marketing channels into new configurations best suited for the new information technology.*

Kuttner (1998) argues that the Internet constitutes an exchange setting close to a perfect market due to the availability of information. This argument merits further examination. On one hand, the high availability of suppliers (interpreted as websites) and low switching costs lead to hyper-competition[30], with the positive effect of increased substitutes for firms and consumers. For firms, the information-richness of Internet may decrease consumer loyalty and creates challenges for creating lasting customer relationships (Goode & Harris 2007, 513). Further, since the actors are largely scattered, finding information in this market of close to infinite number of alternative suppliers (websites) may lead to substantial search costs for both firms and consumers, commonly known as information overload[31]. However, middlemen such as search engines and other information aggregators have the potential to reduce these search and information costs drastically by gathering and processing information on e.g. prices and available suppliers. Additionally, transaction costs and relationship governance costs may be cut by implementing mediating services proprietary to Internet such as networks and standardized communication (see Chapter 3.1.2). The facts that the marginal cost of another member joining is minuscule and the governance of relationships is facilitated through technological means make networks highly scalable, so that they may grow exponentially without causing significant administrative problems.

Networks may be a more cost-efficient alternative for advertisers than direct relations with the publisher. Quoting Benediktova and Nevosad (2008, 5):

> *Using affiliate programs is more cost-effective to the merchants than other forms of online advertising because it diminishes the administrative costs connected with buying advertising. If the program is managed well, it can enable advertising on such a great amount of websites that would be otherwise impossible to acquire.*

Through the use of publisher networks, advertisers aim to minimize relationship governance costs, and to optimize market coverage in the fragmented media. This is achieved by harnessing a large amount niche sites, thus improving reach. Monitoring costs are reduced by automated reporting provided by the network's platform.

Cost reductions may also become an incentive to participate in the network. Transaction costs between agents and principals are reduced by several methods within

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[30] As defined in Wikipedia (2009f): "Often a characteristic of new markets and industries, hypercompetition occurs when technologies or offerings are so new that standards and rules are in flux, resulting in competitive advantages that cannot be sustained. In response, companies must constantly compete in price or quality, or innovate in supply chain management, new value creation, or have enough financial capital to outlast other competitors."

[31] For a thorough definition, refer to http://en.wikipedia.org/wiki/Information_overload.

online advertising. Keyword auctions, for example, balances supply and demand in an automated process while reducing search and bargaining costs. Search costs are partially decreased through the network effect: when buyer and seller parties both form networks, it becomes easier for individual members to find a counterpart, assuming that the network works efficiently. As a result, the cost of finding a partner decreases and search is less difficult and time-consuming. Also, networking reduces contracting costs because a single contract is used instead of negotiations between actors, resulting in costs that are greatly below the situation where each party would negotiate separately. Thus, a network may impose an efficiency lock-in.

Essentially, the problem in cutting the middleman may be explained as follows. Firms wish to reach consumers online (goal) but fail due to hyper-competition and the lack of specific market expertise (obstacle). Because middlemen are specialized in online customer interface, they are able to reach the consumers (solution) and thus provide added value – briefly, *mere employing of new technology is insufficient in replacing mediators* because the demand for mediating services hasn't disappeared but in some cases even grown. As noted by Bakos (1998, 42): "While the growth of Internet marketplaces may lead certain types of intermediaries to extinction, […] electronic marketplaces will more than compensate for this by promoting the growth of new types of electronic intermediaries." The recent success of Google is a good example of specialized intermediary services that advertisers utilize in order to reach the dispersed online market. To further elaborate, Cumbrowski (2008) argues that while the only relevant connection is, classically speaking, between advertisers and publishers (buyers and sellers) and third party providers should be eliminated, the current market reality is different – rather, middlemen "play a distinct role in many scenarios where a one-on-one communication between advertiser and publisher is impractical or impossible."

In particular, networks facilitate the process of advertisers and publishers finding each other in the scattered online market. There are methods such as keyword auctions and contextual targeting that relate to the technical process of matching buyers and sellers (or advertisers and customers) but it is equally important to understand the gravity of the mediating function *per se* that involves (1) creating a single marketplace, (2) gathering buyers and sellers, and (3) mediating the exchange between them (cf. "middleman effect"). Therefore, actors are using intermediaries to overcome the inherited fragmentation of the online market – this is a conscious choice over vertical integration or forming networks and alliances (refer to discussion in Chapter 2.3.1).

As stated above, the middleman effect in the online advertising channel involves creating a common marketplace. This marketplace relies on information systems, which are the Internet (at the high-infrastructural level) and marketplace platform, such as a website or ad exchange platform (e.g. Google AdWords), at the micro-level. The benefits of such a marketplace are associated with lower search and information costs –

as noted by Bakos (1997, 1676):

> *Information systems can serve as intermediaries between the buyers and the sellers in a market, creating an 'electronic marketplace' that lowers the buyers' cost to acquire information about seller prices and product offerings. As a result, electronic marketplaces reduce the inefficiencies caused by buyer search costs, in the process reducing the ability of sellers to extract monopolistic profits while increasing the ability of markets to optimally allocate productive resources.*

Thus, the positive effect is not limited only at micro-level, meaning the exchange between buyers and sellers, but it may also increase the market efficiency as a whole[32].

Relating to the growth aspect, it is important to notice the existence of the so-called network externalities (or effects), according to which "benefits of participating in an electronic market increase as the number of individual member firms increases" (Tomak & Xia 2003, 358). Finally, because online networks offer higher level of flexibility and they are easy to join, abandon and cross-manage, intermediaries may simultaneously operate at different hierarchy levels and different channels, thus creating complex channel configurations and virtual chains that change form rapidly. However, contradictory arguments have been made, arguing that online exchange partners may desire more durable relationships because institutional safeguards and norms are different in the online environment from those of traditional market (Ching et al. 2006, 561). Thus, it seems safe to assume that while increasing interdependence between parties, relationships have the potential to relieve issues arising from environmental uncertainty – both offline and online.

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[32] This requires a simple micro–macro assumption on transitivity; i.e. that the electronic marketplaces are used in a large scale by firms seeking to carry out exchange, so that the positive effects of resource allocation reach the aggregated (macro) level instead of remaining infrequent micro-level benefits.

3 EXCHANGE MODELS IN ONLINE ADVERTISING CHANNEL

3.1 Models of online ad distribution

3.1.1 Online advertisement – a special kind of product

As established in Chapter 2.1.3, there exists a strong analogy between traditional value chain and that of online advertising – same as offline, online advertising channel focuses on (1) delivering ads efficiently to the end customer (cf. reducing costs) and (2) improving product quality and other relevant end customer factors (cf. increasing profit). Further, there are different stages of mediation, discussed in Chapter 3.1.2. However, the analogy differs at least in two parts – first, in the delivery route which is electronic instead of physical and may have many different implementations (discussed in Chapter 3.1.3) and, second, the delivered product.

Essentially, when applying the distribution perspective, advertisements are contrasted to goods flowing through the channel. But how do they differ from other goods? A first factor to consider is that the inventory of ads consists of purely non-tangible goods – that is, there are no issues on stock-outs, spillage, damaged goods or such. An exception to this is mentioned by Edelman, Ostrovsky & Schwarz (2005, 3) who maintain that if there are no ads for a particular search term, the capacity is wasted as goods cannot be stocked. Therefore, in the absence of tangible evidence (e.g. spillage), a lack of ads signals a failure in the efficiency of the channel.

Further, transportation costs are different – due to the digital nature of online ads, distributing 1,000 ads may take place with the same cost as 1,000,000 ads (in other words, the marginal cost of using the ad serving system is close to zero).

By applying Aspinwall's (1958) theory on characteristics of goods[33] when examining advertisements in the property of goods, we notice that online advertising market has the dimensions of both *low adjustment* and *high adjustment factors*. If advertisements are seen as high-replacement goods which is the natural case for non-contextual advertisements (e.g. typical banner ads), a manufacturer has "minimum personal contact

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[33] "The characteristics of goods theory attempts to arrange all marketable goods in a systematic and useful fashion." (Aspinwall 1958, 46). The characteristics of goods include their replacement rate, level of service (i.e. adjustment), time taken to consume the product, searching time, and gross margin (ibid.).

with the ultimate market", which is the users exposed to ads, and the market to be reached is "enormous and dispersed" (Mallen 1970, 52). Here both the message and the good is standardized which translates to a "low adjustment factor". Advertisements are "goods" that require little management because of the unambiguous (technical) product specification. Also, little communication is needed between the parties inside the channel because the advertisements are "manufactured" before entering the channel flow. In contrast, when ads are assigned by *contextual* basis (e.g. based on semantic similarities or search keywords), the interaction with the market is immediate and the message and goods are adjusted on-the-fly, responding to the high adjustment factor. In fact, the dimension of individual customization does not entirely match the aspects of personal and direct communication supposed in Aspinwall's model. Yet, the idea is similar – contextuality means serving ads at the right time to the right customer, thus reducing the "blindness" of the market – even if it means that the advertising message is tailored *ex ante* and the adjustment is performed *ex post* by the ad delivery system. In fact, even the so-called mass-targeted ads can include elements of made-to-measure adjustment if they are modified or replaced upon immediate customer feedback such as that provided by CTR analysis. Therefore, contextuality can be seen as a significant source of value in the distribution process of online advertising as it adjusts the ads (goods) in accordance with end customer preferences. Adjustment can also be approached by long-tailing, as discussed in Chapter 2.2.1.4.

Finally, it is sometimes suggested that whereas in the traditional economy value is a result of scarcity, value in the digital economy derives from plenitude (see e.g. Guly 1998, 4). However, this premise is quite controversial when applied to online advertising – while large part of online advertising value is brought by what is called "generating traffic", there is scarcity present at least in two forms: scarcity of visitors and scarcity of revenue, which encourage media not only to attract traffic but also to activate that traffic in order to generate revenue. Therefore, it can be argued that scarcity is strongly present in the online market in spite of the medium's digital nature. It must also be noted that the concepts of economies of scale and scope existed long before this "idea of plenitude", essentially referring to the same idea. However, economies of scale are present online so that the marginal cost of generating traffic is not equivalent to traditional perceptions of marginal cost – i.e., it is possible to "produce" a large amount of traffic with a relatively little cost, enabling a competitive advantage for small and innovative websites. As stated by Rayport and Sviokla (1996, 35): "The virtual value chain redefines economies of scale, allowing small companies to achieve low unit costs for products and services in markets dominated by big companies." This obviously is restricted to digital products because advantage of duplicating physical products still requires the traditional economies of scale.

3.1.2 Channel configurations (macro-perspective)

The following models of online ad supply contain five alternative channel structures, labeled „macro-perspective' because the ad distribution and related flows are examined in differing channel constructs, instead of viewing the distribution as a technical interaction process (as will be done in the micro-perspective, discussing ad serving).

More precisely, these models differ from the ones regarding ad serving in a sense that they describe the macro-level process of online ad distribution from the publisher's perspective, i.e. different mediation constructs, whereas ad serving relates to micro-level of ad distribution, i.e. network's role in delivering the ad to final users. In other words, the following stages take place *prior to ad serving*. The following models were, in fact, originally developed to describe the information flow under different advertiser–publisher settings especially in affiliate marketing, but may be generalized to examine the supply chains of online advertising as a whole (Cumbrowski 2008).

Specific channel flows defined in the models are presented below.

Table 8   Online advertising flows (Cumbrowski 2008)

Online advertising flow	Description
product information	closely associated with advertiser's motives
tracking URLs[34]	to track publisher's performance
creatives	creative material, e.g. banner or text ads
action and transaction data	to track and report user's behavior on advertiser's website
sales and commissions	mediated payments between advertisers and publishers
payment reporting	records on payments available to advertisers and publishers

These flows are based on parties' different needs, imposing different liabilities to each member. For example, the advertiser provides product information and creatives. The network is responsible for collecting accurate action and transaction data and delivering it to the publisher, as well as for ensuring that sales and commissions are calculated and appointed truthfully (Cumbrowski 2008). This is a typical case in affiliate marketing as the affiliate is paid a commission for realized sales (based on cookies[35] planted by the ad server), but also in search advertising where the payment is based on the amount of generated traffic, measured in clicks. In both cases, the payment and contracting are mediated by the network that also provides the advertiser with performance-related information. Cumbrowski's first model is as follows.

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[34] URL: universal resource locator, refers to Web addresses in common language.
[35] A type of locator which is used to identify visitors.

Figure 13   Model 1: One-to-one relationship (Cumbrowski 2008)

As Cumbrowski (2008) points out, these are chains where one content provider has one contact with an advertiser only. This is the simplest form of information flow as the communication is direct between the seller and buyer. In reality this type of agreement corresponds to direct selling presented in Chapter 3.2.1, and is perhaps rarer that other models in modern online advertising scene. This can be seen because of following conditions that are required from this type of a relationship: (1) the amount of exchangeable information is relatively low (i.e. both parties are able to effectively manage the information), (2) the power balance between the two actors is close to equal (i.e. one-to-one negotiations are beneficial to both parties), and (3) the perceived level of trust is sufficient, so that both parties feel confident to proceed into negotiations.

Essentially, this model has the potential of highly effective communication, and may increase efficiency mainly because the one-on-one nature minimizes the risk of data distortion by third parties, and the possibility of personal contacts enables effective and close communication. Quoting Cumbrowski (2008), "The goal and result at the end is a one-on-one relationship with a publisher to make it as simple as possible to use the data to promote the advertisers products and services." This relates to fulfilling the publisher's specific task as a chain member (cf. role liabilities and role performance).

The following figure depicts the second model by Cumbrowski.
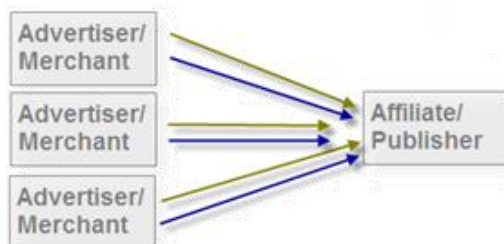
Figure 14   Model 2: Many-to-one relationship (Cumbrowski 2008)

In this scenario, one publisher has several relationships with different advertisers, each of them providing the publisher with material in various formats and methods (Cumbrowski 2008). The key here lies in the publisher's ability to coordinate multiple relationships to different advertisers simultaneously, while maintaining his core competencies (e.g. website development). Externally, publisher will face advertisers' demands; internally, resources are needed to manage advertiser relations and incoming flows. In principle, as the number of managed contacts increases, the more complex it

will become for the publisher to manage them, as data is received from different sources and in different formats (Cumbrowski 2008). Monitoring and managing the relationships also requires more effort when the publisher forms many direct contacts. These effects can be reduced by implementing a network in charge of relational contacts, as depicted in the following.
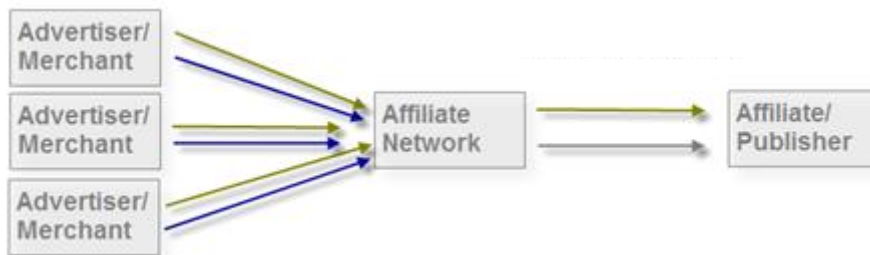
Figure 15   Model 3: Many-to-one mediated relationship (Cumbrowski 2008)

In this structure, there is a network between the advertisers and the publisher. The network "aggregates all the data from multiple advertisers and provides the data in one format and one method to the individual publisher" (Cumbrowski 2008), thus reducing the publisher's cost of and time spent for relationship governance (cf. middleman effect). In other words, the network takes the responsibility for communication between advertisers and publishers. Further, parties may use several networks when seeking additional benefits, as demonstrated below.
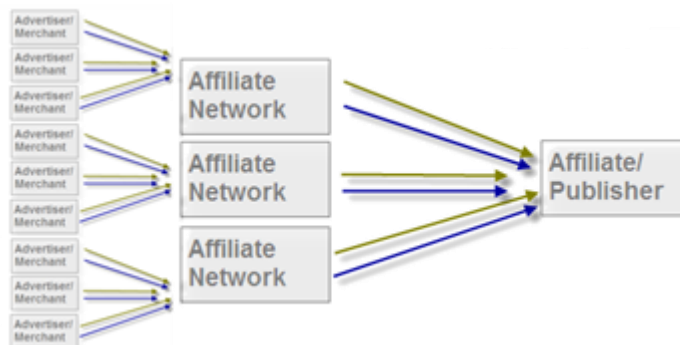
Figure 16   Model 4: Many-to-one polymediated relationship (Cumbrowski 2008)

Here the publisher has established relationships with many networks, each of them mediating access to a varying number of advertisers. The role of networks is to "aggregate the data from the group of merchants each network has a relationship with", assisting in the relationship administration process (Cumbrowski 2008). However, the flow of data is no longer normalized but "different networks provide the data in different formats and via different methods" to the publisher (ibid.). This may be referred to as polymediation. Due to the different formats and methods, the publisher is

required to spend excessive time in processing the information, thus reducing the time to fulfill his specific channel task. Alternatively, the administration of relationships with multiple intermediaries can, in theory, be delegated to a third party vendor in order to reduce workload, as presented in the final model.
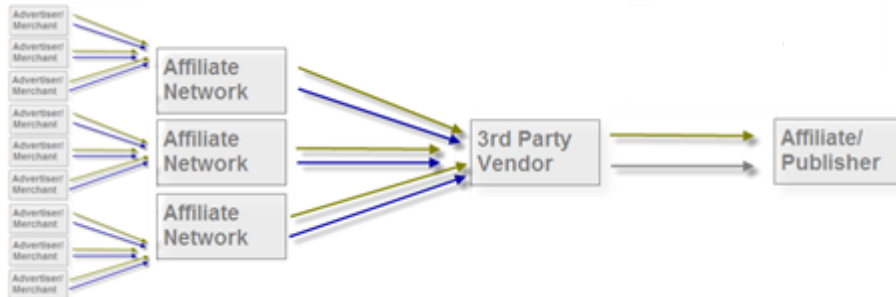
Figure 17   Model 5: Many-to-one aggregated relationship (Cumbrowksi 2008)

In the last scenario presented in the figure, a third party vendor aggregates the data across multiple networks and provides it "in one normalized format to the publisher via only delivery method" (Cumbrowski 2008). The vendor specializes in reprocessing multiple inputs into one output, to facilitate the publisher's task of relationship management towards multiple networks. In fact, this model now contains two layers of intermediaries – first, there are several ad networks that the publisher utilizes e.g. by dedicating one ad placement on his site for each of them. Second, there is a third party vendor who manages streams from the ad networks. This is required for two reasons – first, because the types of data provided by networks differ and therefore are not necessarily comparable. The vendor aggregates data into one single format which is offered to the publisher. Second, the amount of information coming from multiple sources may be excessive, requiring considerable time and effort to manage (cf. the case of direct contacts in Chapter 2.3.1). Again, the vendor facilitates publisher's task by processing data into readily accessible format, so that reports are comparable,

3.1.3   Models of mediated ad serving (micro-perspective)

Micro-perspective refers to the detailed and technical ad serving processes – in other words, how the ad is distributed from advertiser to the network, and from the network to publishers. While the previous models put a certain emphasis on the publisher, the following models highlight the network's role in ad distribution. More precisely, the process of ad serving is basically providing advertisements from an ad inventory (database) to destination sites (see e.g. Chaffey et al. 2006, 391).

A typical ad delivery process is depicted in the following figure:
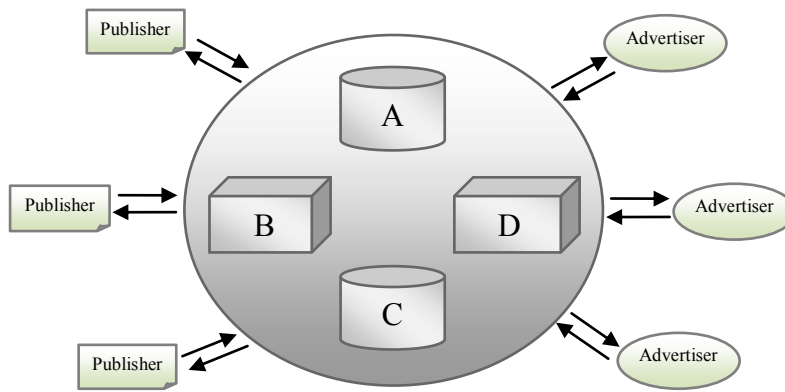
Figure 18   Server-mediated ad serving (Mike On Ads 2007)

The exchange ad-server (lined by grey circle) consists of four main components, which are (A) *centralized reporting database*, (B) *advertisement inventory,* (C) *contextual engine* and (D) *optimization algorithm* (Mike On Ads 2007).

The first two are databases, storing relevant material – in this case ads and various reporting information. Advertisers use the network's technical interface to insert their ads, which the network will deposit in a specific database for later use. Publisher websites are then supplied with ads (outbound arrows) by analyzing the website content and delivering appropriate (targeted) ads with the help of contextual engine. In return, performance and user data is collected from the websites and is used by the optimization algorithm to continuously improve the system. Centralized reporting also takes use of this data, processing it into aggregated reports for advertisers. (Mike On Ads 2007.)

As stated, the previous process relates to ad-serving on publisher websites, i.e. content sites. However, the network may also serve ads in relation to search engine results (i.e. in the search network). This process is quite similar to ad serving in the content network, although one has to consider the relation between ranking search engine result simultaneously but separately. This is illustrated in the following diagram that shows how ads are served on search engine result pages.
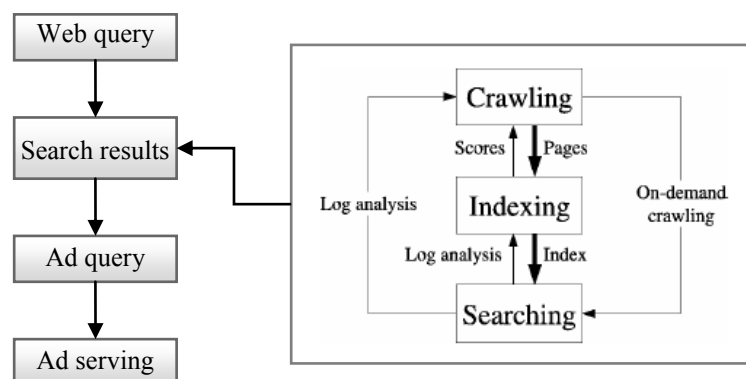
Figure 19   Serving search advertisements (Broder et al. 2008; Janssen 2007, 13)

The two processes are partially overlapping, as search engines need to complete complex tasks before determining the position of websites and ads on the search result page. Briefly, search engines utilize crawlers (i.e. robots, spiders) which scan the Web for websites by moving from one page to another via hyperlinks. Specific information about each website is stored to the search engine's database, known as the index. This data is used when users perform queries, in order to retrieve matching websites and score them by using a ranking algorithm. The most famous algorithm is at present the Google PageRank with reportedly several hundreds of individual ranking factors kept hidden from the public (Wikipedia 2008d).

After ranking the websites, the search engine will proceed with the ad query to find such ads in the ad inventory (database) that have a sufficient match with the retrieved search results. The ads are driven by semantic similarity, so that users searching with specific search terms will be exposed to relevant advertisements. This process, as noted earlier, is called contextual targeting, and it aims at improving advertising performance through higher click-through rates. Targeting can also be based on other factors, such as the user's geographical location or detected behavioral patterns.

Finally, the targeted ads are served simultaneously with authentic search results, known as organic or non-paid results. The web pages showing search results are called search engine result pages (SERP), and they contain both paid and non-paid results, as demonstrated in the following figure:

Figure 20   Elements in Google's search result page

Section A depicts the first part of sponsored (paid) results on the result page, located at the top-center; B represents second column of sponsored results, whereas C covers the organic (non-paid) results. The best advertisement, considering the bid amount in the keyword auction as well as Quality Score, is awarded the "best" rank which is the first position in section A. Overall, three ads are allowed in the section A, whereas section B can include up to seven ads; thus, there can be a maximum of ten ads on the first SERP (Google 2009c). However, as discussed in Chapter 3.2.2, the top position is not always the most efficient choice because there are several other factors that influence the attention received by the ad, e.g. the copy text, inclusion of keywords, and variance in users' cognitive styles when viewing the search results. In other words, the difference of marginal utility between positions 1–3 can be considered small.

A comprehensive description of ad serving between AdWords (advertiser-side) and AdSense (publisher-side) can be found in APPENDIX 2.

3.2 Selling and buying ad space

3.2.1 Alternative selling models

As explained previously, pricing of advertising space can be based on flat fees, impressions, clicks, or keywords. If we take a look at how the selling of advertising space is organized on a typical website, following methods may be discovered (Benediktova & Nevosad 2008, 10):

a. *direct selling*
b. *representative selling*
c. *selling via auctions*
d. *selling via ad networks.*

Direct selling is the most basic alternative. It involves the website owner himself selling the advertising space to advertisers. The main benefit of the model is that there are no middlemen taking a share. The risk include the publisher's lack of expertise and experience in media sales, and the limited access to advertisers. Thus, he may lose some benefit through inefficient negotiation. To eliminate this effect the webmaster might hire a professional sales person with specialized skills or resort to representative selling.

Representative selling refers to external agent specialized in online media sales, i.e. outsourcing. According to Benediktova and Nevosad (2008, 10), such firms charge a commission and may require a certain amount of page views, validation of statistics, and demographics survey in order to represent a website. This relationship can be

beneficial to both parties; even though the agent requires compensation, the representative can improve media sales through specialization and experience in sales.

Thirdly, auctions can be used to sell online advertising space. Much like networks, auction services act as intermediaries facilitating the finding process between sellers and buyers. Auctions offer a useful channel service by bringing together buyers and sellers, and facilitate the process of pricing and resource allocation. Keyword auctions that are discussed after networks are used to sell advertising space, but there are other types of auctions specialized in advertising space selling as well. In fact, keyword auctions correspond better to selling via networks due to their particular nature.

Selling via networks takes place when the publisher participates in a network offering centralized advertising services. Consequently, individual websites may leverage their negotiation power and gain a wide access to advertisers. Furthermore, a network membership also minimizes efforts needed to govern external relationships (as demonstrated in Chapter 2.3). This is due to the fact that the network acquires all communication tasks and the website owner only provides the advertising vehicle.

However, the network also takes a part of the advertising revenue. Additionally, as a part of a network, an individual publisher will have limited control over the specific ads shown on the site (see Chapter 4.3.1). Equally important, little attention is given to an individual publisher since the network focuses on selling of volume instead of specific websites. Finally, some networks set traffic requirements to prevent smaller sites to join (Zeff & Aronson 1999, 247), explained by accumulating governance costs when number of relational contacts increases. However, if the administration of contacts is simplified through economies of scale offered by the online medium – e.g. one-to-many mediation, standardized or mass-customized communication – the marginal cost of another member joining the network has the potential of decreasing drastically.

3.2.2 *Keyword auctions*

Finally, advertising space for text advertisements on the search engine result pages and publisher websites participating in the advertising network is sold via keyword auctions. Overall, keyword auctions relate to search engines' management of ad inventory. In short, ad networks hold an enormous inventory of advertisements that are targeted to consumers through methods such as contextual targeting and broad match, aiming at reaching customers at the right time (i.e. when they are searching for a product) with the right ad that is relevant to their specific search or the website's content. Advertisers, then, bid on keywords that are used in the targeting process.

For example, if the advertiser is bidding for a particular keyword in Google's network, his text advertisement will be shown each time a user performs a search query

with that keyword (assuming that the amount of bid is sufficient). The keyword normally corresponds to a product or service offered by the advertiser (Zhou & Lukose 2006, 1). Most often, ads are shown for queries that are expressly listed among the bid phrases for the ad, thus "resulting in an exact match between the query and the bid phrase" (Broder, Ciccolo, Fontoura, Gabrilovich, Josifovski & Riedel 2008, 28). However, because it is difficult for advertisers to predict queries, search engines employ algorithmic methods to match pre-defined bid phrases with ads in a flexible manner (ibid.). This approach is called broad match, and is it based on semantic similarity between words (see e.g. Abhishek & Hosanagar 2007). Broad match relates to advertisers' bid strategies, especially to long-tailing.

Long-tailing is a keyword strategy that includes bidding for a large number of specific keywords. It offers three main benefits: (1) it is *cost effective* because very particular terms will have little competition and, therefore, lower prices; (2) it *increases reach among specific audiences* that can be niches or heterogeneous masses; and (3) it is *likely to have a positive impact on CTR performance* because longer search queries will produce a better turnover – this relates to the fact that customers express their needs more sophisticatedly when using more words in their searches (AdGooroo 2008, 7). However, use of long tailing is hindered by the fact that it requires a great amount of different ad versions to optimally target all search queries. In other words, the excessive amount of words and word combinations makes it impossible to simulate all relevant search queries so that they would be covered comprehensively (Goldfarb & Tucker 2008, 2). Now, the advertiser has an option to employ broad matching which increases the compatibility with user's search intent. However, if many advertisers resort to broad matching by using similar base keywords, the advantages of long-tailing will soon wear off, as advertisers will be competing over the same queries yet again, resulting in price wars. Moreover, there is a trade-off for advertisers between the number of terms that can be used and the total cost of the advertisement campaign (Abhishek & Hosanagar 2007, 90) which restricts the use of long-tailing – in other words, not all keywords can be claimed but it is a question of optimizing one's budget.

Keyword auction is referred to as a *position auction*, which has different variants (see e.g. Varian 2007). For example, in simple auction the highest bid is awarded with the most preferable advertisement placement purely based on the bid amount, second highest bid will have the second most valuable position, and so forth (Varian 2007, 1177). Secondly, there is the *mixed auction* in which the ad position will be determined by a combination of the bid amount and other factors, such as the click-through rate and ad text relevance (see e.g. Gabbard 2009, 11). This is also known as the Google model of auction because Google uses this type of auction in its advertising networks by combining bids and what is called a Quality Score (see APPENDIX 3).

The Google auction is a variant of a so called Vickrey auction, also known as a

„second price sealed bid auction' (see e.g. Goldfarb & Tucker 2008) or „generalized second price auction' (e.g. Gabbard 2009, 10). In this auction, bid amounts between bidders are hidden and the price paid by the winning bidder is, in fact, the amount of the second highest bid (hence, second price). In the Google model, the bidders insert their maximum bids which represent final bids for a specific keyword. The system then compares the bids, and the winner will pay a price equivalent to the next highest bid posted by another advertiser. Since the auction is never-ending, there are infinite number of iterations and the maximum bids change frequently. However, the actual ad positions the advertisers are bidding on will remain somewhat uncertain, as other factors affect the ad ranking besides the bid amount. Thus, the highest bid will not automatically win the most desirable position in the search result page. (Varian 2006; Goldfarb & Tucker 2008; Google 2009c.)

Additionally, it must be noted that bidding strategies may not always include winning the top position, but to rank between certain positions. This is due to the fact that although, in theory, the winning position is the most profitable one, positions 2–5 can be seen nearly as profitable and, in practice, their profitability may even become higher through secondary factors that are involved in the ad performance such as the attractiveness of ad copy text and inclusion of user's keyword in the title of the text advertisement. Generally, although some ad viewing patterns have been recognized (e.g. "Golden triangle of search"[36], see APPENDIX 1), ad processing on a result page (scanning) somewhat differs between individual users (see e.g. Ojanpää 2006). Therefore, the benefit from winning a position over another cannot be seen linearly incremental, but it is influenced by a variety of creative and non-creative (cognitive) factors – in other words, the positional advantage would seem to follow the principle of diminishing marginal utility commonly applied in the economic theory. Further, at some point a position's profitability experiences a sharp decrease – this can be seen as the effect of ranking "below the fold" or beyond the first result page where the ad's visibility is greatly reduced (see e.g. Marketing Sherpa 2008, 10). However, it can be argued that until this inflation point the loss from a positional difference can be tackled with other means of improving the ad performance.

Nevertheless, firms are naturally interested in which keywords will give them the best return on investment[37] (ROI). In paid search, advertisers "seek to find keywords that will result in high click-through rates and more importantly, higher conversion rates" (Ghose & Yang 2008b, 2). Several methods have been invented to evaluate keyword effectiveness beyond regular click-through and conversion rates, such as the keyword efficiency index[38] (KEI) or traffic acquisition cost (TAC) but they are still far

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[36] Heatmap on how users view search results.
[37] Ratio of earnings and capital invested – ROI describes how profitable an investment has been.
[38] See e.g. http://seo.yu-hu.com/glossary/KEI_Keyword_Effectiveness_Index.htm.

from perfection. Because the number of competitive keywords is ultimately limited, auctions may lead to a cycle of incremental bids, or a price war, especially for popular high profile keywords (Roth & Ockenfels 2002, 1094). To avoid bid wars, firms are constantly looking for alternative keywords and phrases to bid on, e.g. by applying long-tailing. However, some industries are facing higher cost pressures than others, resulting from higher potential gains or conversion rates that are "substantial enough to justify higher bid prices" (Boughton 2005, 31). In other words, some keywords are more efficient than others and give a higher return on investment, resulting in increasing competition over these keywords in the long term (as they cannot be monopolized).

Besides long-tailing, search or click arbitrage is another keyword strategy worth mentioning. Arbitrage emerges from the price differences between different ad networks – essentially, it is buying a keyword for a low price and then selling the traffic that keyword with a higher price. Because sales commission in the CPA model are generally much higher than cost of clicks in the CPC model, the difference of these two constitutes a profit opportunity for many affiliates. However, it must be noted that arbitrage is under some controversy, especially when exploiting the inefficiencies of the market without any intent to provide value for the visitors. For example, arbiters may use a technique of ad trapping to lure visitors into the site and then giving them no choice to move around the site except by clicking paid text links. As a result, visitors coming from this source are without a value for the advertiser. In a broad sense, the previous practice corresponds to a click fraud (see more in Chapter 4.3.2.1).

3.3　Review of pricing models

Following Jansen et al. (2008), "new media tends to emulate earlier media, and just as early television broadcasts resembled radio broadcasts, early Web site advertising resembled traditional mass media advertising". This refers to the fact that Internet advertising was initially priced according to impressions, i.e. the number of times an ad was shown on a Web page to visitors, stemming from the traditional media's cost per thousand (CPM). Impressions were initially used alternatively with flat fee (i.e. fixed) tariffs, most commonly based on time (cost per time, CPT). The main limitation of these models is that they ignore whether a website visitor in fact noticed or clicked the ad banner. Consequently, advertisers find it difficult to track ad performance – a paradoxical situation considering the tracking potential in the Internet. Therefore, these models have lost popularity to other forms of pricing. (Jansen et al. 2008.)

The additional compensation models mentioned by Jansen et al. (2008) are (1) *cost per sale* (CPS), (2) *cost per lead* (CPL) and (3) *cost per click* (CPC). Of these, CPS describes a model where the website is paid based on realized sales; in the CPL model

the basis of compensation is the number of leads acquired by the advertiser through the media website, whereas in CPC the advertising tariffs are determined by click volume, i.e. the number of visitors who actually clicked on the advertisement. The difference between leads and visitors is the depth of their interest in the website – a mere click-through does not automatically indicate a sales lead, whereas filling a contact form would be classified as a typical behavior of a sales lead. (Jansen et al. 2008.)

At the moment, it can be argued, the most common pricing models for online advertising include cost per impressions (CPI), cost per click (CPC) and cost per action (CPA) which typically covers CPS and CPL (see e.g. Subirana & Wright 2007). The following table contains a comparison of typical characteristics between these models.

Table 9   Typical traits of modern pricing models

Model	CPI	CPC	CPA
Ad serving	Advertiser	Network	Advertiser
Ad space cost	Impressions	Clicks	Action by customer
Ad format	Banner, rich media	Text	Banner, rich media
Ad tariffs by	Negotiation	Auction	Advertiser
Ad targeting	Website theme or other classification	Contextual relevance	Niche
Ad placement	Manual by publisher	Automatic by network	Manual by publisher
Ad metrics	CPM, CTR	CTR, CPC	CPA, CPS[39], CAC[40], CVR[41]

The cost per impression (CPI) is still used in many independent websites, along with flat-fee pricing. In contrast, the popularity of cost per click (CPC) stems from the success of keyword advertising, whereas cost per action (CPA) is most used in affiliate marketing. In the CPA model the publisher is only compensated when the visitor of the website performs an agreed action (trigger) – therefore, the visitor has to first click the advertisement on the publisher's website and then complete the pre-defined action on the advertiser's website, which is typically making a purchase. Thus, the publisher carries a part of the advertiser's (conversion) risk by agreeing to this arrangement.

In CPI and CPA models, ad serving is typically performed by the advertisers, so that he provides the publisher with the creative material which the publisher places on the website. In CPC, ads are commonly served from the network's ad inventory, requiring no manual intervention in the distribution process. This also helps the network to keep track on clicks received from different websites which is required to calculate the publisher's compensation and the rent paid by the advertiser for the advertising place. In

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[39] Conversion rate, referring to the percentage of visitors converted to buyers.
[40] Customer acquisition cost, referring to the cost of acquiring converted visitors.
[41] Cost per sale, referring to the cost of advertising (or other cost basis) per sale.

CPI, rent is paid as a function of impressions – in other words, the number of people exposed to the advertisement within a certain period of time. Due to the effects of banner blindness and ad clutter (discussed in Chapters 1.2 and 4.3.2), the actual number of people noticing the ad may be considerably lower than the amount of impressions. In contrast, CPA is the strictest model for the publisher because, as mentioned, he only receives the rent if visitors redirected from the website behave as desired – for the advertiser, of course, this model is the most desirable one.

Regarding different ad formats, it is technically possible to combine any format with any pricing model. However, CPC is associated strongly with text ads, whereas banner ads and rich media are often used in CPI and CPA. This may relate to traditional offline advertising models which do not allow similar tracking possibilities as the Web media (as discussed in the introduction) but are employed online nevertheless. Equally, CPC commonly benefits from advanced contextual targeting, whereas in CPI and CPA the ads are targeted manually by using criteria such as website theme or visitor demographics. Finally, the metrics between the models somewhat differ. Commonly, in CPI costs per thousand impressions (CPM) are measured, originating from the offline media – however, CTR (click-through rate) which measures the amount of people who actually clicked the ad out of those exposed, is also commonly used. In CPC, the CTR rating is even more carefully reviewed since the revenue is directly dependent on it. The case for CPA is more complex because it assumes a deeper connection with the sales process. The basic metric is conversion rate which is the number of converted visitors divided by total visitors from a particular source website. More advanced metrics are cost per sale (CPS) which takes into consideration also other costs besides advertising; customer acquisition cost (CAC) which can be calculated by dividing total advertising spend by the number of customers within a time period; and obviously cost per action which is used to measure the cost of the pre-defined action, paid to the advertising network (this is not necessarily the same as cost per sale less non-advertising expense, because the action itself may be other than sales transaction).

It is important to notice that website owners combine different models to optimize their revenue. Regarding the future of different pricing models, the CPC model is likely to maintain its position in the near future because keyword advertising is a critical revenue stream for the largest ad networks (Jansen et al. 2008). In keyword advertising, the price of a click is determined based on bidding competition among advertisers participating in the keyword auction (see Chapter 3.2.2).

4 EXCHANGE RELATIONSHIPS IN ONLINE ADVERTISING CHANNEL

As more advertising dollars pour online [...] whoever controls the advertiser relationship holds all the cards. —Scott Karp

4.1 Outline of the analysis

Generally, relationships allow actors to "combine resources to achieve more than they could individually" (Schary & Skjøtt-Larsen 2001, 86). Furthermore, Schary and Skjøtt-Larsen (2001, 84) state that "it is a fundamental assumption in the network perspective that the individual firm depends on resources controlled by other firms". In other words, a firm will gain access to the resources by interacting with other firms. In this interaction, reciprocity is important – a firm has to be willing to provide something in exchange for a desired resource (Brown & Timmins 1981, 168). With time, relationships bring stability in an unstable environment by increasing trust and lowering transaction costs in frequent dealing (see e.g. Håkansson 1982).

According to Schary and Skjøtt-Larsen (2001, 73), there has been a shift in management's attention moving "from competition between firms to competition between supply chains"[42], covering all firms from suppliers of raw material to the end customer. "In this sense", they continue, "the management's capability to establish trust-based and long-term relationships with customers, suppliers, third-party providers and other strategic partners becomes a crucial competitive parameter" (Schary & Skjøtt-Larsen 2001, 73). Therefore, relationships have intrinsic value for firms interacting with other actors in the market and merit further examination.

Additionally, the emergence of new technology has not made relational factors obsolete, but they have remained important in the new environment. As stated by Schary and Skjøtt-Larsen (2001, 73): "While practice evolves rapidly in response to market pressures and opportunity from new technology, the most difficult issues stem from management issues in interorganizational relations." This indicates that theories of the field are not outdated and can be transferred across different business environments. Moreover, "the most stable and promising approach comes from theories that explain the behavior of organizations, identify and evaluate the forces acting on their relationships and provide a basis for predicting future behavior" (ibid.). Thus, studying exchange relationships is important – if the underlying forces that influence relationships remain more constant than dynamically changing environments, the

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[42] This is known as "intertype" competition (Reve & Stern 1979, 405).

research findings may help to understand and predict market changes.

Therefore, this chapter will focus on analyzing exchange relationships in online advertising channel by utilizing agency-theoretic concepts. The goal is to describe and explain challenges faced by different actors when cooperating, and providing theoretical solutions in overcoming these challenges. According to Gassenheimer, Sterling and Robicheaux (1989, 16), research on exchange relationships has focused on two viewpoints, namely (1) the behavioral and (2) the economic approaches. The behavioral approach sees relationships between actors as "political struggles in which the power and dependence of each party control the decisions of others", while the economic approach assumes that relationships exist "to allocate distribution responsibilities and role performance tasks in a manner which minimizes costs and maximizes profits" (cf. value creation) (Gassenheimer et al. 1989, 16). Relating to this dualism, Rosenberg and Stern (1970, 40) note:

> *While the firms join for economic considerations, they behave, in a broader context, according to social imperatives; that is, as goal-seeking, role-defining, power-exercising, and information-exchanging entities.*

In other words, social factors – or, more widely speaking – non-economic factors can be seen as a part of the actors' decision making, although the preliminary reason for cooperating is of economic nature. This premise motivates further examination of rationality under the exchange context, in particular because this study aims at cutting deeper into the relational exchange dynamics between actors of online advertising.

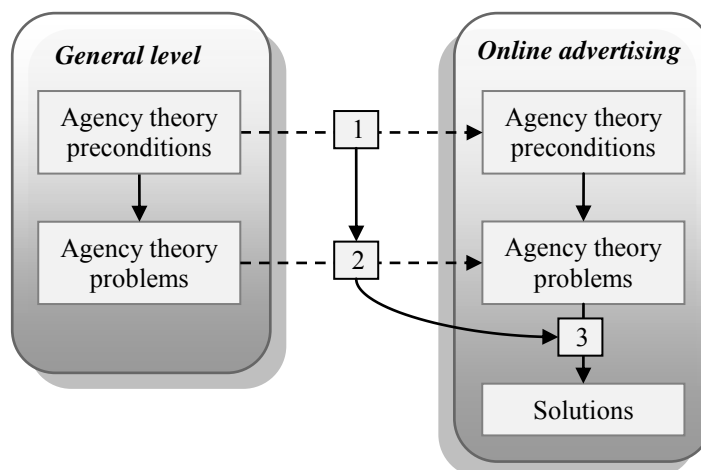The following figure displays the structure of analysis.

Figure 21   Model of analysis

The analysis, as the earlier parts of the thesis, contains two levels of examination – first, the general level and, second, the online advertising level. The agency theory is discussed first from a general perspective, which includes identifying the preconditions

of relational agency settings. Next, problems relating to the agency setting will be discussed, arising from delegation, information asymmetry and bounded rationality. After this, the same proceeding will be repeated regarding selected relationship settings in online advertising channel. More precisely, preconditions are analyzed in within the online advertising channel (denoted by 1). The first analyzed precondition of the agency setting, delegation, focuses on seeing the actors of online advertising channel as principals and agents who delegate tasks to one another. This relates to the discussion of task division within a channel (see Chapter 2.2.2). As it will be proven, the agency perspective in the online advertising channel is valid for this precondition. Analyzing the second precondition, information asymmetry, involves several pro–contra arguments – essentially, it will be discussed whether the technological attributes of the market environment are used to reduce information asymmetry between parties.

The preconditions lead to special types of problems, identified with the help of general agency theory (2). Cases of moral hazard, risk sharing and adverse selection are discussed, among other issues. Finally, some solutions to these problems are proposed (3), based on dedicated attention to online advertising.

As such, the methodology of the analysis follows that used throughout the thesis, i.e. from general to specific. However, it has been seen appropriate to limit the scope of analysis – as the agency theory is a wide collection of theories, focusing efforts on certain variables gives more depth to the analysis. For example, moral hazard and adverse selection are analyzed more thoroughly than other agency-theoretic problems.

Further, the compensation models applied in the analysis are CPC and CPA, both tied performance, either by measuring clicks or user actions (see Chapter 3.3). In particular, this discussion corresponds to incentives and co-aligning agent's and principal's interests, which is central in curbing the agent's resorting to opportunistic behavior. Also, CPC and CPA are commonly used by mediating advertising networks.

It has been established in this thesis that the role of intermediaries is crucial in online advertising channel; in particular, Google can be named as the most important intermediary in the current state of online advertising. Also, it has been established that relationships between advertisers and media (content providers, publishers) are subject to different interests, business focuses, and resources. Further, it is evident that the parties are in fact delegating tasks to one another, in order to promote their own interests. With all this in mind, the starting point for analyzing relationships seems to offer feasible research grounds in terms of exchange dynamics.

4.2 Basics of agency theory

4.2.1 Preconditions to agency theory

This chapter presents agency theory as a conceptual starting point for analyzing relationships in online advertising channel. According to Pavlou, Liang and Xue (2007, 110), the principal–agent problem was "originally formulated to study the separation of ownership and control that arose with the rise of professional managers who were controlling assets they did not own". Later, the theory spread to cover many other types of relationships and markets, explaining transactional arrangements between "self-interested parties with incongruent goals in the presence of uncertainty" (Pavlou et al. 2007, 106). Generally, uncertainty can be defined as the "degree to which the future states of the environment cannot be accurately anticipated or predicted due to imperfect information" (Pavlou et al. 2007, 107). It refers either to (1) the ability or expected ability of parties to respect the contract, or to (2) the stability of external and internal economical factors affecting the overall risk facing the transaction (Freedman 1994, 19).

The principal–agent perspective can be seen valid under all transactional exchanges taking place in a socio-economic system that enables opportunism, asymmetric information, and bounded rationality (Pavlou et al. 2007, 106). Particularly, there can be seen following conditional implications for an agency setting (see e.g. Jensen & Meckling 1976; Eisenhardt 1989, 58; Laffont & Martimort 2002; Pavlou et al. 2007):

Table 10   Preconditions to agency setting

Precondition	Description
Delegation	contract in which principal delegates tasks to agent
Asymmetric information	differences in parties' information
Uncertainty	agent's possibility to choose opportunism, equal to principal's risk
Bounded rationality	restrictions relating to parties' decision making

The agency relationship can be defined as a "contract under which one or more persons, the principal, engage another person, the agent, to perform some service on their behalf which involves delegating some decision making authority to the agent" (Jensen & Meckling 1976, 311). This delegation contract can be motivated by (1) the principal's willingness to achieve increased benefits associated with the division of tasks such as the agent's expertise and experience; (2) the principal's lack of time, information, ability or other resources to perform the task himself, or (3) "other forms of the principal's bounded rationality when facing complex problems", referring to

internal and external constraints that make it more feasible for the principal to delegate the task instead of performing it by own means (Laffont & Martimort 2002, 28). Laffont and Martimort (2002, 28) state that "by the mere fact of this delegation, the agent may get access to information that is not available to the principal", including e.g. the opportunity cost of the delegated task, the precise technology used, and the agent's true capability to perform the task – thus, the delegation itself leads to private information, risk and uncertainty. Also, the agent is not performing the task out of goodwill, but expects to gain – thus, when a relationship between principal and agent is established, both except to gain something from the other one (cf. reciprocity).

Based on the common economic assumption, market information is by nature both imperfect and asymmetric – imperfection refers to the fact that all relevant information about the circumstances associated with a firm's decision-making cannot be in the knowledge of this one firm, as there are a variety of external contingencies that the firm cannot be aware of. Asymmetry, on the other, means that some parties have more information than others (or that parties have different information), either created by natural causes or deliberate attempts to acquire specific information or hide it from others to gain information advantage. Briefly, in exchange information asymmetry corresponds to "a situation in which one party in a transaction has more information than another"[43] (Wikipedia 2009b). Most often, information asymmetry favors the agent, so that the principal has less information than him, thereby granting the agent information advantage (Pavlou, Liang & Xue 2007, 112). This advantage, also known as "private information", is critical – as noted by Laffont and Martimort (2002, 2), "if the agent had a different objective function but no private information, the principal could propose a contract that perfectly controls the agent". Because the agent cannot be bound by such a contract, he is tempted to act opportunistically.

Additionally, because the agent's objective function (interests or goals) may deviate from that of the principal, there is a risk that he will fail to act in the principal's interests when performing the delegated task – this can be based on deliberate attempts to maximize own benefit at the principal's expense, or simple inability of the agent to complete the task. In the latter case the principal has demonstrated a judgment failure when choosing the agent, affected by the information problem in assessing the agent's true quality. Under information asymmetry, a principal's capability to differentiate agents based on quality is reduced because "low-quality sellers try to hide their true characteristics to extract unjustified profits", while high-quality sellers will find it difficult to signal their true quality (Pavlou et al. 2007, 112). Additionally, while the seller's true quality will be discovered after the transaction, the buyer will need to make

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[43] The degree of parties' information, however, may vary from completely private information or partially private information to non-private information (Rogerson 1992, 778).

a decision at the time of purchase, leading to uncertainty and risk (ibid.). The principal's risk is increased by the fact that "economic agents pursue, at least to some extent, their private interests"[44] (Laffont & Martimort 2002, 2). This view is backed by Williamson who describes opportunism as "self-interest seeking with guile" (1996, 6[45]) and clarifies the concept (1979, 234):

> *Opportunism is a variety of self-interest seeking but extends simple self-interest seeking to include self-interest seeking with guile. It is not necessary that all agents be regarded as opportunistic in identical degree. It suffices that those who are less opportunistic than others are difficult to ascertain ex ante and that, even among the less opportunistic most have their price.*

Consistently with this rather narrow description of behavioral rationality, also the agency theory assumes that both principals and agents are motivated by self-interest and, whenever possible, attempt to exploit the situation to maximize their profits (Pavlou et al. 2007, 112) – although as Williamson pointed out, some are less apt to do so. Nevertheless, the delegation of tasks has to be made under potentially conflicting interests and imperfect (or asymmetric) information about the agent (Laffont & Martimort 2002, 2) which logically leads to the conclusion that the agent's actual, realized behavior will become a compromise between the agent's selfish decisions (in the bounds of his free choice) and the ones increasing the welfare of the principal – in other words, agent's degree of self-interest will determine the outcome. In reality, however, firms may face constraints, such as values and norms, and relational or contractual bonds that they do not wish to break, somewhat limiting their freedom of choice. These may relate e.g. to asset specificity, closeness, commitment, dependency, bonds or other types of exit barriers (see e.g. Williamson 1996).

Overall, theory on economics and rationality dates back to the idea of *homo economicus* (economic human) that defines human behavior as rational and broadly self-interested (see e.g. Persky 1995). Further developed, the theory of rational choice proposes that actors are primarily guided by a "utility function", acting categorically so that benefits are maximized and costs minimized (see e.g. Rader 1963). However, market behavior does not always follow such a path, as pointed out by many scholars criticizing the theory (e.g. Tugwell 1922; Archer & Tritter 2000; Zafirovski 2003); this critique partly leading to the emergence of normative and descriptive schools of economic rationality (e.g. Smith 1991; Miljkovic 2003). In principle, the concept of

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[44] In fact, this corresponds strongly to the channel conflict paradigm as described by Reve and Stern (1979, 406): "activities among members […] are aimed at attaining both collective and self-interest goals" – resulting in not only conflicts between firms but in a conflict within the actor's decision making (whether to choose opportunism or common benefit).
[45] Original source: Williamson, O. E. (1975) Markets and Hierarchies. New York: Free Press.

'bounded rationality' contests the rationality of decision makers in economic as well as in non-economic contexts (Simon 1997). Bounded rationality may be regarded as the outcome of three factors (see e.g. Coleman & Fararo 1992; Ricketts & Elgar 2002):

a. *insufficient information*

b. *limits in decision maker's cognitive abilities*

c. *time constraints*.

Insufficient, imperfect and incomplete information refer to the amount of knowledge that actors have when making decisions. In game theory terms, complete information would include information about structures on which the game is based, whereas perfect information would additionally include the information relating to other actors' choices in the game – reversely, incomplete and imperfect information refer to the opposite, in which some elements of the environment are hidden along with the actions taken by other "players" (see e.g. Gibbons 1992, 55). This state of reality is seen to negatively influence the capability of an actor to make correct decisions to achieve his goals.

Limits in cognitive abilities refer to limited computational capacity to process available information. In social psychology, cognitive factors reducing one's rationality in decision-making situations are generally called *cognitive bias* (see e.g. Haselton, Nettle & Andrews 2005, 724–727). It has been discovered that individuals commonly resort to many types of intuition heuristics to simplify decision-making situations (see e.g. Tversky & Kahneman 1974; Haselton et al. 2005, 727). In general, simplifying can be seen as a means to cope with the number of available choices approaching infinite, so that the simplest solution is the right one (cf. Occam's razor[46]). As such, heuristics can be considered as an optimization strategy under bounded conditions. However, it should be noted that in many decision-making situations the number of available choices is considerably smaller, even to the point of yes–no dichotomy. It seems logical to assume that selecting from few alternatives is easier than from thousands (cf. paradox of choices[47]); therefore, simplification is not always a required decision-making strategy.

Time is a third relevant variable since many economic decisions have to be made under time pressure – even if this was not the case and time was not limited, time spent for going through all available alternatives would itself prove irrational behavior, considering the fact that other players make decisions more rapidly influencing the optimal decision making variables and outcomes (thus, the environment is dynamic, hindering static decision making). Also, because other players can be assumed to make both rational and irrational decisions, their behavior is impossible to fully predict. As put by Coleman and Fararo (1992, 31), "complex and uncertain environment […] gives rise to a stochastic process in which the initial starting state and random events early in

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[46] Occam's razor essentially proposes that the simplest solution to a problem is the best one.

[47] Paradox of choices suggests that the more choices a decision maker has, the more difficult it is to make the decision.

the process can have an important effect on long-term trajectories and produce multiple equilibria." The concept of bounded rationality is especially relevant under complex and uncertain environments (Ricketts & Elgar 2002, 36). Quoting Duncan (2003, 320): "In environments characterized by complex-dynamic dimensions where a large number of changing factors differ from one another, uncertainty is predicted to be high." This is because complex environments are "characterized by environmental uncertainty which influences a channel member's expectations about the certainty of the task environment and thereby creates doubts about the longevity of favorable market conditions" (Sahadev 2006, 183). In other words, there are considerable market risks that forcefully reduce the standard of rationality in practical decision-making under volatile conditions. Finally, time is a relevant factor because it may relate to traditions and institutionalization in organizations' decision-making, leading to outcomes that have "more in common with the traditions of an industry or a market than rational decision making by either of the parties" (Håkansson 1982, 25).

Overall, the previous factors contradict with the classical theory of rational choice which often assumes the opposite – that is, perfect information and infinite time. It is, as stated, widely regarded that these assumptions reduce the validity of the rational choice theory in real life contexts (see e.g. Friedman & Hechter 1988, 204). Essentially, even if all the required information was available – which it is not – the decision maker would face limited capacity to process this information in a manner that would, taking internal and external realities into consideration, calculate the best possible (rational) choice for him. However, as the actors in any case have the motive to act rationally, they must accept a compromise between optimization and realities. This behavior is known as *satisficing* (Simon 1997, 295–296). It is based on the assumption that rational decision-making does not need to involve one's intentions to optimize his gains but it may relate to finding a sufficient, or "satisficing", solution – this is explained by Tyson (2009):

> *A decision maker is said to exhibit satisficing behavior when he or she chooses an alternative that meets one or more specified criteria, but that need not be optimal with respect to any particular set of preferences or objectives.*

Further, the alternative choices are presented sequentially, so that the first alternative that reaches the decision maker's aspiration level (minimum expectations), is chosen (Simon 1955, 104). To elaborate, in his normative discussion over rationality, Hammond (2009) argues that to achieve a higher level of rationality, actors should apply satisficing criteria to limit their decision-making models while still optimizing within the choices available by this bounded model. This, as Hammond argues, deviates slightly from the original idea of satisficing behavior in the sense that actors do optimize within a consideration set provided by the bounded model (cf. rational choice theory) – however, if we recognize that they are aware of the fact that even the optimal

choice of action within the consideration set is likely to be sub-optimal considering the limits of their decision-making model, the contradiction with the concept of satisficing behavior dissolves. Further, it can be asked whether it is their free choice to bound their models, or if it's another manifestation of the problem of bounded rationality – in fact, it would seem safe to assume that actors are aware of their cognitive and time limits and therefore devise willingly a model sufficient to achieve the relative best choice. Relating to this, a difference between the concepts of „optimizing' and „maximizing' may be noticed – optimizing would refer to finding the best possible solution among all existing choices, whereas maximizing would be the same, except among all possible choices of a bounded decision-making model[48].

Further, from a social perspective, it can be argued that non-rational or irrational behavior "is merely so because the observers have not discovered the point of view of the actor, from which the action is rational" (Coleman & Fararo 1992, 169[49]). Thus, judging the rational ground's of specific actions without knowing the decision maker's preferences may be regarded pointless – on the contrary, instead of straight-forward optimization, this relativity of rationality seems at first hand to describe economic agents as decision makers more realistically than computed or "mechanized" optimization calculations, given that the rational choice is not always based on optimization of financial benefit. This is because behavior can be logical even though not economically beneficial – or, as argued by Zafirovski (2003), "behavior can be rational not only on economic grounds but also on non-economic ones". Thus, the goal of the decision maker is not always economically rationally but it may follow other logic such as emotions, social norms and values (ibid.). Zafirovski (2003) continues:

> *In the terms of Pareto, there are no two separate modes of action, one in the economy (rational) and another in society (non-rational), but all behavior combines logico-rational and non-logical elements.*

This other type of logic, partially represented by preferences[50] (tastes, wants) in the rational choice theory, belongs to economic decision making as well. In particular, different logical grounds are found relevant when noticing the existence of risk relating to decision-making situation – because unseen circumstances pose a risk for the decision-maker, overstating risk would therefore seem rational especially under uncertain economic conditions in which the perceived risk of losing money can be considerable. This refers to the fact that the decision maker's risk behavior may affect greatly to its behavior, so that actors with high risk tolerance (risk seeking) are prawn to

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[48] Some authors see „maximizing' as a sub-concept of „optimizing' (see Coleman & Fararo 1992, xi).
[49] Original source: Coleman, J. (1990) Foundations of social theory. Harvard University Press: Cambridge.
[50] "Partially" because in the traditional rational choice theory preferences are seen as stable variables that directly alter the outcome, whereas in reality they may change through learning or other factors, so that past preferences cannot be used to full predict one's future actions.

make different decisions than risk aversive actors. The nature of the outcome also affects one's risk attitude – as argued by Miljkovic (2005, 629), it is a common pattern that "choices involving gains are usually risk averse, and choices involving losses are often risk seeking, unless the probability of winning or losing is small."

To further elaborate on logical grounds of behavior, there can be seen to exist different types of rationality; for example, Weber identified *zweckrational* (goal-oriented) and *wertrational* (value-oriented) actions, along with *affective* and *habitual* rationality, their logics relying on emotions and tradition, respectively (see e.g. Archer & Tritter 2001, 59[51]; Zafirovski 2003). Based on Weber's idea, goal-oriented rationality may at first seem irrational if the goal is beyond several causal steps only in the knowledge of the decision maker. For example, an investment decision may seem foolish if it puts the firm's existence at stake but prove to be rational (profitable) if the logic is valid in the long term – in this case, "irrational" behavior is only mediating the achievement of rational goals. In particular, the rationality of many economic decisions – such as investments – is hard to evaluate beforehand due to their long-term nature and derived complexities; as the long timeframe complicates matters in terms of unforeseen contingencies such as other players' actions (cf. imperfect information), even the successful outcome of an investment would not determine the decision's rationality if it can be credited to random events not taken into consideration in the decision-making model, or chance (cf. Hobbesian problem of order[52]). In game theory terms, "a 'game' is a conflict situation where one must make a choice knowing that others are making choices too, and the outcome of the conflict will be determined in some prescribed way by all the choices made." (Poundstone 1992, 6). Thus, causal relations, including their order and effect, can be seen as a source of complexity.

4.2.2   Agency problems

4.2.2.1   Grouping of problems

According to Eisenhardt (1989, 58), agency theory is concerned with two major problems that may take place in an agency relationship. These include (1) the agency

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[51] Original source: Weber, M. (1947) The theory of social and economic organization. Collier–Macmillan: London.

[52] The Hobbesian problem of order is divided into factual and normative order, the latter being the logical order of events following the rules of a specific system – in contrast, factual order may disobey these rules and produce outcomes that seem irrational (but still take place in reality) (see Parsons 1937, 91–92).

problem (also known as moral hazard[53]), and (2) the risk sharing problem (Eisenhardt 1989, 58). The agency problem arises when "desires or goals of the principal and agent conflict and it is difficult or expensive for the principal to verify what the agent is actually doing" (ibid.). Briefly, opportunism may take place in agency relationships with is a conflict of interests – the risk arises from the fact that the principal "cannot fully monitor the agent's behavior and enforce compliance" (Pavlou et al. 2007, 112).

Second, the problem of risk sharing takes place when principal and agent have different risk attitudes, which results in different opinions on the best course of action (Eisenhardt 1989, 58). Thus, the agent may act against the principal's wishes. However, the risk sharing problem also relates to fact that the principal commonly has to carry the risk of the agent's actions to the full extent, whereas the agent's risk is limited or even zero. In other words, the principal has "more at stake" whereas the agent may choose "free riding", i.e. acting differently than if he would be required to carry the consequences of his actions – typically, agents may become more risk seeking when their decisions inflict no direct financial loss to themselves.

Broadly considered, the agency setting can be seen to relate to following types of problems (see Akerlof 1970; Eisenhardt 1989; Nayyar 1990; Laffont & Martimort 2002; Ricketts & Elgar 2002; Pavlou et al. 2007):

Table 11   Classification of agency-theoretic problems

Agency problem	Sub-problems	Explanation
Information problems *(asymmetric information)*	▪ adverse selection ▪ moral hazard ▪ non-verifiability	pre-contractual hidden information problem post-contractual hidden action problem by third party in verifying true actions
Decision problems *(delegation contract)*	▪ screening problem ▪ contracting problem ▪ verification problem	assessing agent's true quality is difficult incomplete contract reduces control over agent monitoring agent's actions is difficult
Rationality problems *(bounded rationality)*	▪ risk sharing problem ▪ hold-up problem ▪ prisoner's dilemma	principal carries full risk of agent's actions asset specificity may lock in principal cooperation under high risk of opportunism

The classification cannot be seen as very strict, since all problems draw elements from other problems – for example, practically all problems are associated with information asymmetry, uncertainty and risk of some sort. Additionally, the list is not comprehensive, especially regarding rationality problems of which there exists hundreds of game-theoretic versions. However, despite of the lacks of the classification, it still provides a neat way of summing up problems associated with the principal–agent

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[53] In this work, "agency problem" is used as a synonym of "agency-theoretic problem", whereas "moral hazard" refers to agency problem as explained by Eisenhardt.

relationship, grouped under three main problems.

In general, information problems relate particularly to imperfect and asymmetric information. Adverse selection is a pre-contractual problem for the principal when selecting the agent under uncertainty of his true quality, but it may translate to post-contractual problem under a large number of low-quality agents in the market – in this case, it will touch all market players, including (1) principals who are unable to distinguish high-quality providers from low-quality ones, (2) agents who are unable to convey true quality in a credible manner, and (3) end customers who are unable to distinguish high-quality products from low-quality ones. Moral hazard, then again, is purely a post-contractual situation in which the agent's true actions are hidden from the principal. Third, non-verifiability relates to the problem faced by third parties (e.g. court of law) in verifying the true course of action, only in the knowledge of principal and agent (and only regarding their own actions).

Decision-making problems relate to the delegation contract – first, principals have difficulties in screening high-quality agents from low-quality ones; second, contracts are born incomplete; and, third, monitoring agent's behavior is difficult and costly after contracting. Rationality problems, then again, arise from the factors of bounded rationality and relate to intrinsic problematic of human decision making which faces both external and internal challenges; e.g. lack of sufficient information and lack of sufficient judgment or computational capacity, respectively. This is related to choices made by parties, typically to post-contractual issues, meaning that the established relationship between principal and agent faces problems of opportunism, e.g. each party anticipating the other one's actions, as well as the interaction of each one's choices. Strategic problems differ from rational problems in a sense that in strategic situations the decision makers' are assumed to act rationally, so that the benefit they seek can be achieved. In contrast, rationality problems arise from the inability to make such decisions – therefore, rationality problems are conceptually much wider, while strategic problems can only be applied to well-defined game-type of situations.

4.2.2.2 *Information problems*

Role of risk and uncertainty is particularly important in agency relations, where it arises from the principal's inability to fully monitor the agent's behavior, leading to two commonly recognized information problems, namely (1) adverse selection and (2) moral hazard, the former stemming from hidden information and the latter from hidden action of the agent (Pavlou et al. 2007, 110). Laffont and Martimort (2002, 3) mention a third type of problem resulting from information asymmetry, which is *non-verifiability*. Non-verifiability is a situation in which the principal and the agent share the same

information *ex post* but no third party can observe this information, thereby complicating the process of clarifying truth in the case of (legal) conflict (Laffont & Martimort 2002, 3). Non-verifiability is particularly related to conflict resolution by third parties and, therefore, not very relevant to our study.

Moral hazard can be seen as a problem of hidden action, whereas adverse selection is a problem of hidden information – meaning that the former relates to the possibility of the agent hiding his actions and the latter to hiding of crucial information (e.g. relating to the agent's quality) (Nayyar 1990, 514). Further, adverse selection can be defined as a pre-contractual problem taking place prior to contracting the agent, whereas moral hazard is a post-contractual problem (Pavlou et al. 2007, 109). Both problems relate to quality uncertainties – quoting Pavlou et al. (2007, 110):

> *Even if the principal may overcome the hidden information problem by pre-contractually selecting a high-quality agent, the principal is still exposed to the hidden action problem since the agent may decide to post-contractually skimp on quality. Therefore, even if this study takes place during the pre-contractual phase, it is still influenced by expectations of the post-contractual problem of hidden action. Both agency problems thus need to be examined to fully understand agency problems.*

In particular, moral hazard is a special case of the agency problem, defined as "the prospect that a party insulated from risk may behave differently from the way it would behave if it were fully exposed to the risk" (Wikipedia 2009b). Thus, it relates to the risk that the agent may have an incentive to act inappropriately (from the principal's perspective) if the interests of the agent and the principal are not aligned. In agency theory, moral hazard arises because the agent "does not bear the full consequences of its actions" and, therefore, "has a tendency to act less carefully than it otherwise would". In other words, the agent may act carelessly because his actions will have little direct impact on itself, whereas the principal will have to carry the risk from agent's behavior to the full extent. The problem is aggravated by the fact that the agent usually has more information about his actions and intentions than the principal, so that the principal cannot perfectly monitor and control the agent (cf. verification problem) – in other words, "the agent generally has more information about its actions and intentions than the party paying for the negative consequences of the risk." (Wikipedia 2009b.)

Adverse selection problems, in turn, arise when "the buyer is unable to observe either the seller's characteristics or the contingencies under which the seller operates" (Nayyar 1990, 514). This is because the agent commonly has more information of the market in which he operates and the exact quality of the delegated task. Therefore, the principal will face difficulties in determining the agent's true competence, quality and value of the service provided and the risks of malpractice (Nayyar 1990, 514). This results in the so-called screening problem, i.e. ruling out bad-quality agents (Laffont & Martimort

2002, 350) and to the problem of adverse selection. Screening problem relates to the difficulty experienced by the principal in choosing a high-quality agent – as stated by Pavlou et al. 2007, 10): "Information asymmetry puts principals in a disadvantaged position because they are faced with a pool of agents with undesirable characteristics and they cannot easily discriminate the „cherries' (high quality agents) from the „lemons' (low quality agents)". Adverse selection, then again, occurs when low-quality agents are indeed chosen instead of high-quality ones.

However, adverse selection may also take place in an entire market. A typical example of this is when low-quality providers banish high-quality providers by lowering prices so that it becomes impossible to charge for high quality (Akerlof 1970, 490). In this case, the buyers in the market face strong quality uncertainties, i.e. cannot correctly judge the true quality of the product (which is only known by sellers) – as a result, low-quality providers may exploit this information asymmetry by charging more than the quality of their product would allow. However, buyers soon learn this fact in the market and become overcautious over quality, which leads to decreasing average prices of the product subjected to quality uncertainty. In turn, high-quality sellers may become "locked in" if the large number of low-quality sellers lowers market prices and reduces buyers' trust – thus, charging for high quality becomes more difficult. Therefore, adverse selection is a possible result of two market conditions, namely a sufficient amount[54] of low-quality providers and asymmetric information, leading to buyers' quality uncertainty. (Akerlof 1970.)

A classical example of adverse selection is the well-established "lemons" problem by Akerlof (1970), describing the market for used cars[55]. It is a classical example of adverse selection where "bad products drive out good products" because high-quality sellers are unable to obtain a fair compensation of the quality provided[56]. Another common example is from the insurance industry where clients who have insurance may not "take adequate measures to protect their properties against theft and accidents" (Choi et al. 1997, 141). If the insurance firm is unable to distinguish theses careless clients from careful clients, they will have to apply a single insurance premium to all clients, calculated based on the average risk. Adverse selection will occur when careful clients will consider the insurance premium as too high and withdraw from the insurance market, while careless clients remain because the average premium now favors them. Ultimately, serving only careless customers will force the insurance firm to exit the market or face "piling insurance claims" (ibid.). Thus, information asymmetry

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[54] Enough to raise suspicion and lower average price of goods.
[55] "Lemon" is an appellation of a low-quality used car (American-English) .
[56] As explained by Akerlof (1970, 490): "Bad cars drive out the good because they sell at the same price as good can; similarly, bad money drives out good because the exchange rate is even. But the bad cars sell at the same price as good cars since it is impossible for a buyer to tell the difference between a good and a bad car; only the seller knows."

leads to adverse selection which, in turn, leads to the problem of disappearing markets.

However, there may be seen to additional assumptions for this to take place – first, buyer preferences must be consistent in a sense that they are only willing to purchase high-quality products while avoiding low-quality products. This may not always be the case; e.g. in the case of private label commodities or other homogenous products, the buyer may be willing to sacrifice some of the quality over a lower price[57], in which case low quality is not undesired but the loss of high-quality products is caused by an authentic lack of demand. In contrast, the theory of adverse selection assumes that the customer deliberately wants to avoid low-quality products – a case of optimizing one's price–quality ratio – but is hindered by the lack of information as well as the seller's attempt to hide unfavorable characteristics of the product. However, should there be demand for low-quality products but not for high-quality products, it is appropriate that latter become redundant. In conclusion, because the attribute of "bad-quality" in the theory of adverse selection contains in fact the assumption that buyers precisely wish to avoid this type of products, there is a risk that differences in buyer preferences are overlooked. This would lead to wrong conclusions in which disappearing markets are granted to adverse selection instead of the normal functionality of market mechanism.

Second, in the case of used cars, the "escaping market" will not occur if the high-quality seller has no choice but to sell his car, or if he is otherwise willing to lower the asking price[58]. This is because the seller is still able to sell his car in the same market even if the price does not meet his asking price, but with a lower price (i.e. the demand for the car exists, it is only the question of price[59]). However, for firms that generally face a higher cost of producing high-quality products, this is a more serious problem quality uncertainty makes it difficult to add the higher costs to prices. Because firms need to create profit (as oppose to private sellers of used cars), there is a limit in how much they are able to apply price elasticity in their asking prices. Thus, it depends on the buyers' demand function whether equilibrium can be found between the firm's possible asking prices. Even if there is demand at a certain price point (i.e. there are consumers that prefer high quality), the firm still has to convey its quality in a credible way[60]. Overall, if there is quality sensitivity (demand) in the market and the quality can be efficiently conveyed to consumers, thus overcoming the information problem, adverse selection is not likely to occur. In this case, the true quality is good which can

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[57] In other words, the buyer is more quality sensitive than price sensitive.

[58] In fact, the market will only degrade if high-quality sellers are not flexible with their bidding prices but instead "keep the car". In some cases, the asking price is set too high, even though the quality of the product truly is high.

[59] As correctly pointed out, it is the seller's choice whether to sell the car or not with the current market price.

[60] Quality may also have different implications for different firms because it can be used to gain competitive advantage in the market (cf. strategic differentiation). In this case, demand may exist regardless of the price – in fact, artificially high prices may even increase demand (cf. Veblen goods).

be messaged in the market. To signal product quality, the seller may use methods such as (1) advertising, (2) pricing, (3) warranty, (4) certificates, or (5) exclusive distribution (Animesh et al. 2005, 10), as long as the communication is perceived credible by the target (Choi et al. 1997, 143). This also applies to the lemons problem – if the seller is able to convince the buyer that his used car is of higher quality than the average used car, the price can be set higher and value of quality properly appropriated. Indeed, it is worth noticing that even non-differentiated goods (such as cars of the same model, year and mileage) may differ in prices – thus, there is quality differentiation.

4.2.2.3   Rationality problems

Generally, bounded rationality is a relevant determinant in the agency setting because it hinders the principal's ability to foresee the agent's quality and the outcome of the delegation. As stated by Ricketts and Elgar (2002, 35):

> *The capacity of person A to imagine all possible future contingencies and then process the information required to allow for these different contingencies in the contracts of each person he hires is obviously limited. Person A faces, in other words, a problem which is now usually referred to as 'bounded rationality'.*

The problem of rationality is inherent in exchange settings – "as long as either uncertainty or complexity is present in requisite degree, the bounded rationality problem arises" (Ricketts & Elgar 2002, 36). Therefore, bounded rationality is closely related to information conditions (imperfection and asymmetry) – however, whereas information is seen as an external variable in actors' decision-making, bounded rationality is more an internal factor built in the "human organism" (Simon 1955).

Further, the existence of contractual governance will not remove the risk of opportunism because of the agent's information advantage – in other words, the principal is unable to verify that the agent has behaved appropriately. Bounded rationality in the agency setting results in the argument that "formal, written contracts between firms are, at best, incomplete", for they cannot cover "every eventuality and contingency faced over the course of a long-term relationship" (Nielson 1998, 445). More precisely, contracts that reach a sufficient complexity (typically all interfirm contracts) are incomplete by nature due to bounded rationality, so that the agent's behavior cannot be completely controlled by them (Williamson 1996, 6). Logically, the possibility of opportunistic behavior is greater under incomplete contracts because the principal cannot shield itself against agent's every possible course of action. Essentially, if the agent's interests deviate from those of the principal and the agent is aware of the fact that he may escape consequences of opportunistic behavior, there can be seen a

strong risk of opportunism. In fact, the lack of principal's total control over agent's behavior can be seen as the fundamental reason for agency problems.

If the rationality of market actors is under controversy, so is their rationality in exchange relationships. This relates to opportunities of collaboration, often ignored due to secondary factors such as greed, mistrust, fear and such. Despite the assumption that a high level of collaboration would optimize each party's profits in a long-term relationship, it can be claimed that firms often disregard this opportunity. Therefore, in these cases economic rationality (in terms of a utility function) is not the driving force it perhaps should be – hence, there must be other forces that cause what we perceive in the real world. Factors that hinder rationality in an exchange may relate to opportunism, emotional factors, overstating or understating risk, decision-making distance between firms (and inside them), *et cetera*. In the literature, rationality problems in cooperative situations have been approached with the game theory that presents actors as parties in a game of choices (see e.g. Poundstone 1992). Game-theoretical models can be seen to represent "global schemes" of rational behavior (Simon 1955, 101). That is why examining rationality through game theory[61] seems appropriate.

An example of a rationality problem in an exchange situation is when firms refuse to improve their efficiency through cooperation due to concerns that it would increase the other party's bargaining power, and thereby reduce their own negotiation position. This is identifiable e.g. in the so-called *hold-up problem*, presenting that firm refrain from making investments to reduce their risk of dependency (see e.g. Williamson 1983; Rogerson 1992). This can be easily modeled with a game where both parties are waiting the other one to make the first move – assume that there are two firms who cooperate in producing a product X, each of them having their won facilities. Then, to improve efficiency firm are required to make a substantial investment in a specific factory that produces a component usable only in making the product X – additionally, both parties participation is needed to finish the product X, so that if either one withdraws from cooperation, product X cannot be manufactured (i.e. there are no alternative suppliers). Parties now have to decide how the investment is financed. If the first firm makes a mutually benefitting investment, then the second firm gains an advantage by not binding its capital into the investment, such as a factory, while still gaining access to the investment (cf. the free rider problem). In other words, it escapes the liability risk –

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[61] Game theory is focused on applied decision-making situations under varying rules of complexity. Quoting Bronowski on von Neumann (founder of game theory): "…I naturally said to him, since I am an enthusiastic chess player, „You mean, the theory of games like chess.' „No, no,' he said. „Chess is not a game. Chess is a well-defined form of computation. You may not be able to work out the answers, but in theory there must be a solution, a right procedure in any position. Now real games,' he said, „are not like that at all. Real life is not like that. Real life consists of bluffing, of little tactics of deception, of asking yourself what is the other man going to think I mean to do. And that is what games are about in my theory.'" (according to Poundstone 1992, 6).

additionally, if it is assumed that the first firm still needs the collaboration with the second firm in order to produce (e.g. through supplying raw material), the advantage is even more obvious. Of course, there are other factors to consider such as the firms' operational scale and the second firm's dependency over the first firm (which may be great in spite of the lack of relationship-specific assets by his part).

The hold-up problem suggests that firms in partnership would not act rationally (i.e. optimize their profit by cooperating and sharing risks) but are driven by other motives, essentially relating to self-interest (e.g. opportunism, self-interest and self-preservation) – those motives overriding economic rationality, defined as long-term benefits of cooperation. As such, it can be seen compatible with the classical notion of economic rationality under risk-aversive behavioral model (see e.g. Chavas & Holt 1996); in other words, uncertainty and risk affect the decision-making so that it becomes rational to minimize own risks instead of maximizing profit, and profit from other firms' willingness to make risky investments. In the asset specificity scenario, a firm would actively avoid risk-taking behavior while taking advantage of other firms' higher risk-seeking attitude; thus, instead of sharing risks, firms are held up, eventually taking a higher risk if competitors take the benefit of the investments.

However, the particular type of irrationality can be explained through issuing the concept of *asset specificity*. Asset specificity relates to the transaction cost theory, made topical by Ronald Coase and further developed by Oliver Williamson. The term, transaction-specific asset (TSA), refers to assets that are specifically acquired to complete certain transactions (see e.g. Williamson 1979). For instance, "production of a certain component may require investment in specialized equipment, the distribution of a certain product may necessitate unique physical facilities, or the delivery of a certain service may be predicated on the existence of an uncommon set of professional know-how and skills" (Wikipedia 2009c). More specifically, Williamson identified four types of asset specificity, namely (1) site-specificity (e.g. location of resources that is difficult or impossible to change), (2) physical asset specificity (e.g. a factory), (3) human asset specificity (e.g. specially trained staff) and (4) dedicated assets (e.g. refinements in production machinery or processes) (Williamson 1983).

The importance of asset specificity arises from the fact that once acquired, the specific asset may have a low value for other uses (Freedman 1994, 22). As put but (Williamson 1979, 240), the specificity of assets can create problems if "the value of specific capital that in other uses is […] much smaller than the specialized use for which it has been intended". In other words, the asset is acquired for the exact purpose it serves in the exchange and cannot be easily redeployed or sold. According to Williamson (1979, 240), "the existence of such specialized assets can lead to situations in which the partner is effectively „locked into' the transaction". Thus, transaction specific assets may give rise to the switching cost of partner and raise perceived exit

barriers (as backed in Nielson 1998). The relative significance or scale of the asset investment also contributes to the risk – for example, investments in generic assets involve little risk for either party of the transaction in case the relationship ends, because the assets can be redeployed or sold for decent value (Freedman 1994, 22). More specific assets, then again, may be difficult to redeploy in another use. This results in the fact that some assets are "sunk" permanently and cannot be utilized outside the specific relationship (Williamson 1996, 124). As noted by Klein, Crawford and Alchian (1978, 299): "Once installed, an asset may be so expensive to remove or so specialized to a particular user that if the price paid to the owner were somehow reduced the asset's services to that user would not be reduced." Thus, the so-called quasi-rent[62] of the asset holder becomes threatened as the user of the asset is tempted to renegotiate lower usage prices (rents), which is a form of opportunism (Klein et al. 1978, 298–299).

Briefly, when a firm possesses transaction specific assets, its dependency over another firm necessary in the production process may increase, which is perceived negatively by actors who wish to remain unattached. There are many risk associated with high dependency, such as loss of decision-making power and independence. Further, if an actor has invested in the relationship by acquiring specific assets, the undesired dependency is elevated and the actor may face substantial cost arising due to these investments should the relationship be terminated. In these cases, the actor may become "locked in" and has no choice but to continue the relationship, even if better alternatives were available. Further, a firm facing these costs may be unable to seek better compensation elsewhere due to relationship-specific assets. This may result in partners' tendency to avoid making specific investments, i.e. the hold-up problem.

It seems obvious that exchanges are driven by a multitude of factors outside economical rationality despite the valiant efforts to prove otherwise. Yet, many of these reasons follow logical patterns of thought, for example in terms of reacting to risks (cf. risk behavior) or to interfirm distance, e.g. so that strategically closer partners have a higher access to value produced by a firm. In fact, even motives related to non-desired qualities such as opportunism, fear and greed may assume logic in an uncertain environment. To elaborate, under short time-span firms tend to look for instant gratification instead of long-term profits, resulting e.g. from uncertainties associated with long-term collaboration (short-term benefits are more certain and, therefore, rational). Hence, opportunism may be rational (logical) in this mindset, although still hurtful for the relationship, with lost profits of collaboration making up the opportunity cost. As such, opportunism can in some cases be seen as a trade-off between instant and future benefits (cf. deferred gratification[63]).

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[62] Can be defined as the relative profit of an asset compared to alternative usages (cf. opportunity cost).
[63] A psychological concept referring to the fact that postponing gratification (e.g. profits) may lead to a larger pay-off.

4.3 Agency theory and online advertising relationships

4.3.1 Preconditions in online advertising channel

4.3.1.1 Delegation

As earlier established, the principal–agent theory examines the relationship between two actors, principal and agent (see Chapter 4.2.1). Under this relationship setting, the first actor, called principal, will delegate some tasks to the other actor, called agent (cf. specialization and division of labor), over which he holds only limited control. Due to conflicting interests, information asymmetry and the principal's inability to verify and control the agent's behavior to the full extent (cf. bounded rationality), the relationship faces serious challenges, e.g. moral hazard and adverse selection (see Chapter 4.2.2).

In the following table, agency theory is applied to elicit roles and delegated tasks under various agency settings between the online advertising channel members.

Table 12   Principal–agent roles applied to online advertising

Principal		Agent	Delegated tasks
Advertiser	➔	Publisher	Advertising performance
Network	➔	Publisher	Advertising performance
Publisher	➔	Network	Selling of advertising space
Advertiser	➔	Network	Acquiring visibility (reach)
(Advertiser	➔	Agency/broker	Running online campaigns)
(Advertising firm	➔	Network	Acquiring visibility (reach)
(Agency/broker)	➔	Publisher	Advertising performance

To simplify matters, the following discussion, or relational analysis, will focus on the core members of the online advertising channel, namely advertisers, publishers and network. Therefore, advertising firms or brokers are not considered in the analysis. The network perspective will focus on Google, although affiliate networks are also discussed in some contexts to enable comparative discussion between different compensation models (CPC and CPA). Further, the main focus is on mediated relationships between advertisers and publishers. The following figure demonstrates the relations between online advertising channel members, as seen from the agency perspective (delegation).
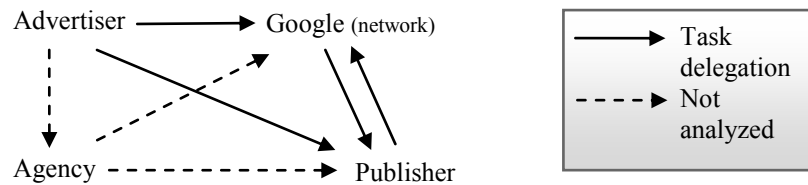
Figure 22   Delegation relationships in online advertising

As such, each member is in fact delegating tasks to another, although advertiser is never in the role of agent. Google faces most delegation demands, which emphasizes its central role in online advertising. The matter of advertising performance involves acquiring website visitors and delivering ads to them – mainly, this is delegated to the publisher who places the ads on his website and acquires the traffic. However, performance in fact relates to each party – the advertiser that designs attractive advertisements, the network (Google) that is serving the ads by using contextuality to target them to end customers, and the publisher that contributes by placing the ads properly on the website, so that they attract users' attention and generate clicks (cf. Chapter 2.1.3). If the publisher fails to place the advertisement properly, users will not notice it and the work done by Google and the advertiser will be lost – similarly, if the website is not frequented, the advertising performance is poor. However, there is strong incentive for the publisher to act appropriately since his compensation is directly linked to performance (as discussed in Chapter 3.3).

By joining Google's network, the publisher delegates advertiser space selling to Google (a case of network selling, see Chapter 3.2). By doing this, the publisher aims to benefit from Google's specialized ability to attract advertisers and sell advertising space in a professional manner. It can be argued that Google currently enjoys a good reputation among end customers and advertisers; in other words, Google's products have in general a good reputation in terms of usability and the company strives to put users first – as formulated in the firm slogan: "Don't be evil." Consequently, publishers are confident in contracting Google, not only because they expect it to perform in a trustworthy manner but also because of its popularity among advertisers and end users who react better to targeted text advertising than e.g. to banners (see Chapter 1.2.3).

Generally, a publisher's resources (e.g. business and contracting expertise, money) are scarcer than those of the advertiser, resulting in negotiations between partners with asymmetric resources. The advertiser might then gain an advantage due to his larger resources such as business expertise. If this is true, the individual publisher would benefit from joining a network that can provide professional sales and negotiation force, thus balancing the resource asymmetry. As a result, contracting through a network may

reduce the publisher's contracting risk, relating to the advertisers' possibility to benefit from the "professional advantage" which would allow him to offer insufficient rents for advertising space or to introduce other opportunistic contract terms, or from other types of advertiser's moral hazard (as defined in Chapter 4.2.2). However, as the information asymmetry may also favor the publisher under different conditions, the network may equally reduce the advertiser's contracting risk.

Further, it is not only financial and other "traditional" business resources that determine the bargaining power of actors in online advertising channel. Rather, the ability of generate traffic may affect bargaining power more than the previous factors, considering the fact that the essential goal of online advertising is to generate advertising value – thus, a "big" advertiser may have worse negotiation position than a "small" publisher if the latter generates a substantial amount of traffic. In this case, joining a network might not be profitable for the publisher due to some loss of control. This is because when delegating the contracting of advertisers to the network, the publisher will also issue its bargaining power to the agent. As a consequence, the negotiations will be carried out between the network and the advertiser, leaving the publisher's participation irrelevant. While there are several benefits to this delegation, the loss of bargaining power may also have negative consequences. For example, the publisher's ability to filter ads is reduced when ads are served automatically from the network's ad server (cf. screening problem) instead of requiring a specific authorization of the publisher over the quality of ads displayed (see Chapter 4.3.2.2).

In contrast, it is common that the publisher may freely select the advertiser in the CPA model. Affiliate networks, for instance, allow publishers to freely select which advertisers' ads are displayed on the website. This choice is critical under the CPA model because the publisher has a strong incentive to discontinue relationships to advertisers with low conversion performance. However, in Google's CPC network, publishers' selection power is limited, raising some dissatisfaction among publishers[64].

Finally, price setting is beyond content providers when delegating ad space selling. Prices are set by either negotiations between the network and the advertiser (e.g. fixed CPC tariffs), market mechanism (e.g. keyword auctions), or by the advertiser (e.g. CPA tariffs in affiliate networks). Independents publishers have the freedom to fix their prices ("take or leave" tariffs) regardless of performance but further revenue will not be shared by advertiser, as in the CPA model. In contrast, AdSense publishers lack this freedom. If members of the content network are not pleased with click rates, they have two options: leave the chain or increase their performance to increase profits. But they have no influence over the prices for which advertising space is sold. Further, the publishers' share of revenue is kept secret by Google, which reduces value sharing

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[64] See e.g Mike On Ads (2008)

transparency and increases publishers' uncertainty.

The advertiser, then again, delegates advertising space buying to Google. By doing so, it will gain access to a vast network of publishers, thus achieving considerable reach and exposure for its advertisements. Delegation will also reduce advertiser's transaction costs, including search, contracting and monitoring costs. This is because the network takes responsibility for searching and contracting proper publishers, which could be difficult for the advertiser considering the online fragmentation – in fact, it would be impossible for the advertiser to acquire a similar reach without using a mediator, as the number of direct contacts would amount to tens of thousands. The network will also monitor publisher behavior in case of misconduct and provide information (reports) in a readily accessible format, so that the advertiser is not required to gather and process data on publisher. As such, the advertiser needs to find, contract and monitor only one party, the network, which increases contactual efficiency and reduces transaction costs (see Chapter 2.3.1, explaining the middleman effect).

In theory, advertisers have significant bargaining power in the channel because they produce revenue for other channel members, and face no delegation demands from other members. Yet, advertisers are dependent on end customers (website visitors), which ultimately drives their advertising spending. At the same time, advertiser's influence may be restricted because it is based on financial grounds instead of other (relational) bonds such as expertise or knowledge that would be more difficult to replace. While advertisers with more money also have more power in comparison to advertisers with less money, smaller advertisers will logically suffer, despite of the quality and performance of their ads. Briefly, this risk can be reduced by methods such as Google's Quality Score (see Chapter 4.3.3.1).

Delegating traffic acquisition to one network increases the dependence of this particular supplier as the "core provider", whereas diversifying efforts to alternative advertising networks would allow for greater independence. This may lead to issues of asset specificity. For example, the mere act of using Google AdWords might lead to habitual bonds, and reduce the willingness to actively search for better alternatives. However, the specificity issue is mitigated by the fact that competing ad networks are generally very similar[65] – hence, the possibility of knowledge transfer facilitates the switching of a supplier. Furthermore, the investments are smaller than physical investments such as manufacturing facilities, without such allocations in physical assets that would introduce a type of lock-in. Specific, or dedicated assets are mainly of human type, associated with the knowledge relating to network's advertising platform (e.g. Google AdWords). Yet, increased media budgets and the strategic value of online advertising increase the importance of the selection of a network.

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[65] Although, due to differences in individuals' learning curves the ad platform may become more specific.

Additionally, the advertiser's interest in rare types of traffic might reduce its bargaining power towards the provider of such traffic. This rare type of traffic may be a particular audience that the advertiser pursues. The dependency over the source of traffic may also increase as a result of this need. However, the effect applies mainly to one-to-one relationships and is reduced under a network arrangement due to the lack of direct relationships between advertisers and publishers. Even if the advertiser is able to choose a specific publisher (as in Google's AdWords), the dependency will not increase the publisher's bargaining power because the contract is made between the advertiser and the network (and between publisher and network, respectively). As such, the "honest" advertiser will never be worse off when delegating the contracting of publishers to the network[66]. In contrast, in networks with lower degree of competition, large advertisers may try and leverage their power by purchasing all available advertising space to maximize exposure (a type of market hi-jack[67]). However, this strategy is poor since it is likely to result in rapid burn, eventually hurting the advertiser's interest (see e.g. Marketing Sherpa 2008, 12).

Due to the large number of participants, the network risks high relationship governance costs. However, because the communication is largely mass-customized – meaning that relevant information such as contract terms, news and support content are located on the network's website – the governance cost per relationship can be mitigated. The low marginal cost of additional members joining also increase the scalability of the network, allowing more and more websites to join with close to fixed cost. Further, expansion of the scale and scope are effects that feed the growth – in other words, as more and more publishers join, the feasibility for advertisers to also join increases (because the potential reach grows) and *vice versa* (cf. network externalities).

When there is a mediating network between the advertiser and publisher, not only the efficiency is increased, but also the trust between partners is enhanced since the network represents a neutral middleman, entrusted with monitoring payments and service quality. This is particularly important because the online advertising market involves uncertainty in the form of opportunistic and deceptive behavior – due to e.g. geographic distance, advertisers find it difficult to monitor publishers and *vice versa*. The network that specializes in minimizing these hazards reduces uncertainty experienced by both parties, but especially by the advertiser who risks losing money as a consequence of unethical methods. Naturally, the network must truly be efficient in their fight against deceptive behavior and to convince the parties that deception is efficiently mitigated in the network. This also guarantees that the reputation and trust of the service stay elevated which is important for long-term stability of the delegation relationships.

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[66] "Honest" because dishonest advertiser might be willing to abuse their bargaining power against weaker publishers, which becomes impossible in network-mediated delegation.
[67] Chaffey et al. (2006, 393) call this "road-block".

4.3.1.2   Information asymmetry

While traditional chains may suffer from a lack of such technology that enables cost-effective information sharing, this is not the case online (Wadhwa, John & Gandhi 2002, 217). The Internet technology facilitates flow of information by technological means, including e.g. data aggregation, automatic processing of reports, e-mail, instant messaging, intranets and EDI (electronic data interchange). Thus, information sharing can be performed on real-time basis with typically low costs. Yet, it is not obvious that actors automatically exploit the increased opportunities of information sharing to reduce the natural state of information asymmetry. By contrast, the decision whether to share information or not involves multiple factors relating actor's decision making – in fact, parties may even deliberately hide information (as will be discussed in Chapter 4.3.2.1).

First, the issue of information asymmetry may be either alleviated or aggravated by the actors' willingness to communicate and share information. Wadhwa et al. (2002, 271) note that channel members are not always willing to share information because of psychological, competitive, or cost reasons, and "leaking" information may pose a threat to the competitive advantage. Ching et al. (2006, 559) also note that abundant and costless price information increases the risk of opportunistic contracting, thus creating uncertainty in exchange relationships. Because acquiring and processing information is costly, it becomes an asset that is shared selectively, so that the amount of shared information also depends on the role and importance of the partner (Kim, Cavusgil and Calantone 2005, 171[68]) The paradox is that a high degree of information exchange may improve the relationship at many levels, including enhanced trust (see e.g. Anderson, Lodish & Weitz 1987, 87; Shankar, Sultan & Urban 2002, 10), satisfaction (e.g. Nielson 1998, 447), facilitating resolution of disputes (e.g. Ching et al. 2006, 560), increasing goal compatibility (Anderson et al. 1987, 88) and long term planning and collaboration (e.g. Nielson 1996, 447). Thus, many positive and negative factors are to be considered when deciding the degree of information sharing – the sharing logically influences information asymmetry between parties, although some degree of information asymmetry is inherently associated with exchange relationships.

Additionally, physical and temporal separation between online buyers and sellers may further increase information asymmetry (Huston & Spencer 2002, 50). Therefore, even though in some cases the availability of information is high online, all parties still do not possess perfect information in the market. By contrast, there are information asymmetries between principals and agents relating to core issues of the agency theory. In the online advertising channel, information asymmetry generally favors Google

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[68] Original source: Turnbull, P. – Gibbs, M. (1987) Marketing bank services to corporate customers: the importance of relationships. International Journal of Bank Marketing, Vol. 5, No: 1, 16–19.

because it gathers information on not only advertisers and publishers, but also end users. In general, it can be stated that communication between publishers and Google is standardized and it is not easy for content providers to personally reach Google. It is safe to assume that this relates to Google's attempts to minimize relationship governance costs, even at the cost of some relational goodwill. However, despite information collected by Google, publishers and advertisers may still have private information, leading to cases of moral hazard (discussed in Chapter 4.3.2.1).

Relating to information asymmetry, it is common knowledge that advertisers seek to predict end user preferences. In contextual advertising this problem relates closely to demand for ads because they depend directly on search queries (i.e. ads are matched with searched keywords). Google has an information advantage on the topic because it stores information on each search query. This information is partly shared with advertisers through platforms such as Google's Keyword Tool and Google Trends which can be used to trace and predict the popularity of specific search queries, indicating trends in customers' search preferences. This information can then be used to create and target ads to specific market segments – although not comprehensive, the information shared by Google inarguably facilitates the advertiser's tasks of reaching specific audiences by reducing information asymmetry between advertisers and Google.

Additionally, in the keyword auction advertisers are unaware of the competitors' bids or click-through rates, or the direct impact of Quality Score to their ad placement. This makes the advertiser's optimization problem more difficult, especially if he is targeting a specific position. However, for high-quality advertisers this is a smaller issue since they gain leverage for their above-average performance – but even they are uncertain of the exact ad position, only in the knowledge of Google. In contrast, advertisers using the AdWords platform have access to information on average positions in a certain period, as well as their development – with thousands of impressions, this information may in fact be more useful for average advertisers than individual placement data. Advertisers can also set position preferences according to which their ad is displayed if the position is (1) higher than a given position, (2) lower than a given position, (3) within a range of positions, (4) or in a single exact position (Google 2009d).

Essentially, information asymmetry relates to trust issues in the channel. Publishers need to be able to trust that Google is paying them a fair share of the revenue earned in cooperation. On the other hand, Google has to be able to trust that the clicks creating the revenue are valid, so that the publisher is not involved with click fraud activity. Moreover, the advertiser needs to be able to trust that clicks of which they pay are verified and they in fact receive the paid traffic – not only in terms of volume but also quality, so that the incoming visitors are genuinely interested in the advertiser's website. Due to the superficiality of relationships between Google and publishers, trust will not develop very deep in the sense that parties could "rely on each other when it really

counts" – rather, it is easy for Google to replace publishers or ban them without a need for negotiations; and it is equally easy for publishers to terminate the relationship and replace Google with other network providers. While this holds true in principle, in reality parties may have different degrees of dependencies that will complicate switching regardless of the lowered trust standard.

4.3.2 Agency problems in online advertising channel

4.3.2.1 Moral hazard

Moral hazard, defined in Chapter 4.2.2, refers to a state of uncertainty, in which an agent may act opportunistically to increase own benefit, while the principal has to accept this risk for the sake of delegation, information asymmetry and bounded rationality. More precisely, such behavior that takes place at the expense of others and under information advantage is called opportunistic. The risk of this opportunism, as discussed earlier, is called moral hazard. Particularly, moral hazard in the online advertising channel relates to issues such as (1) *click fraud*, (2) *hiding information* (e.g. free exposure and traffic) and (3) *unequal revenue sharing*.

The different types of moral hazard in the online advertising channel are discussed in the following – first, implications of click fraud to different parties are analyzed; then, problems of free exposure and free traffic are defined. Finally, unequal revenue sharing is discussed in a wider context of risk. Throughout the topics it is assumed that parties of online advertising aim to optimize their own revenue, i.e. follow economic rationality; however, revenue can be optimized either so that all parties benefit, or that only some parties benefit (cf. agent's degree of self-interest). In other words, actions may contribute to common good, or create conflicts of interests. As established, conflict of interest between principal and agent amplifies moral hazard.

4.3.2.1.1 Click fraud

Click fraud can be defined as a opportunistic behavior taking place under the CPC model when "a person, automated script, or computer program imitates a legitimate user of a web browser by clicking on an ad for the purpose of generating an improper charge per click" (Subirana & Wright 2007, 43). In other words, the click is not based on a true interest in the advertisement, and the advertiser is deceived – as stated by Mungamuru

and Weis (2008, 187): "Click fraud refers to the act of clicking on advertisements, either by a human or a computer, in an attempt to gain value without having any actual interest in the advertiser's website." The problem is associated with unethical publishers.

Fraudulent clicks are, in fact, generated by opportunistic publishers who aim at increasing their revenue, firms that wish to increase the competitors' advertising costs, or third parties hired to perform click fraud in the means of producing financial benefit or loss for some parties (Subirana & Wright 2007). As elaborated in Google (2009e), "AdWords advertisers may try to attack competitors by raising their costs or exhausting their budget early in the day", or "AdSense publishers may click ads appearing on their own websites in order to inflate revenue". Specifically, click fraud may take place through following methods (Google 2009e):

- *manual clicking* (e.g. competitors, unethical publishers)
- *click farms* (hired individuals who click ads)
- *pay-to-click sites* (pyramid schemes giving rewards for clicks)
- *click bots* (software created for automatic clicking)
- *botnets* (click bots channeled through hi-jacked computers)

By Google's definition, fraudulent clicks are a part of larger group of falsely initiated clicks – Google calls them „invalid clicks' instead of fraudulent due to the fact that they can be the result of an accidental click, double click, or other unintended cause instead of unethical motives (Google Blog 2007). According to Google, the problem of invalid clicks only touches less than two percent of all clicks, of which 0.02 percent are in fact fraudulent (Beal 2006); other estimates vary from 12 to 16 percent (Click Forensics 2009). It is difficult to judge which estimation is closer to truth because it depends on how well Google's fraud detection mechanism is able to screen fraudulent clicks.

Click fraud relates to a special type of moral hazard for each party involved – first, publishers are tempted to click the ads on their own site to increase earnings. Second, advertisers are tempted to click on competitors ads to add their cost and exclude them from keyword auctions by filling their daily budgets with wasted traffic. Finally, because fraudulent clicks, like all clicks in the network, increase Google's revenue, it faces a moral hazard of not fighting effectively against the click fraud, thus maximizing short-term profit. However, long-term disadvantages create a disincentive for this type of opportunistic behavior. This is mainly because click fraud in the network is likely ruin trust and reputation, causing advertisers to exit the market (cf. adverse selection in Chapter 4.2.2). As stated by Tuzhilin (2006, 45): "The amount of revenues that Google forgoes for crediting advertisers for invalid clicks is insignificant in comparison to the amount of revenues Google risks to lose if it loses trust of the advertisers".

As such, it is likely that Google is truly optimizing the system because overcharging advertisers and providing them with low-quality traffic would likely be spotted in the long run by advertisers analyzing conversion data. Obviously, the matter also includes

legal precautions, as Google has already been repeatedly sued by advertisers facing click fraud. For example, in July 2006 the firm settled a click-fraud lawsuit for $90 million (CBC 2007). Further, even a low percentage of click fraud causes substantial losses to Google in crediting advertisers for the amount of invalid clicks, up to a billion dollars a year (CBC 2007). However, these are actually no losses because the clicks are "fake" to begin with so nothing is really sold, and Google's system in fact deducts these clicks automatically from the advertiser's bill (Google Blog 2007). Google only faces loss if the system identifies so-called false positives, i.e. credits the advertiser for clicks that were invalid in reality (Mungamuru & Weiss 2008, 189), or if a publisher is paid for such clicks that later are compensated to advertisers.

Generally, click fraud can be fought by improving the detection mechanism, detection based on IP addresses, times, duplication, and other click patterns, as well as list of known sources of invalid clicks (Gabbard 2009, 13). It must also be noted that the advertiser can also monitor clicks (e.g. through auto-tagging[69]) and excluding IP addresses[70] (Google 2009f). In Google's network, clicks are analyzed in a three-stage process, including (1) proactive real-time filters, (2) proactive offline analysis, and (3) reactive investigations (Google Blog 2007). All clicks taking place in the network undergo the first stage, in which statistic abnormalities are spotted in the click stream by a dedicated algorithm, and invalid clicks are screened out before charging the advertiser – according to Google, most invalid clicks are filtered out at this point. The second stage is based on a combination of technical and manual screening, focused especially on the content network because the publishers have the biggest incentive to commit click fraud. Finally, stage three is based on complaints from advertisers, leading to special investigations by a click quality team. (Google Blog 2007.)

Further, despite Google's efforts to increase transparency, advertisers may still feel uncertain about the efficiency of Google's methods, especially because it would be easy for Google to either provide false information or understate the problem to increase own profits. The matter is aggravated by the fact that information asymmetry favors Google, making it more difficult for advertisers to monitor the network's actions. This is a problem because Google does not fully disclose to advertisers whether a particular click was marked as valid or invalid by the system. Yet, the advertiser may find this specific data useful in order to monitor Google's actions, or to verify that he is not being charged for fraudulent clicks, or to block out certain publishers. On the other hand, if Google shared specific information, it would give out hints of the detection system, thus allowing unethical users to create more advanced defrauding tactics (Tuzhilin 2006, 15). However, Google has recognized the need of separating high-quality publishers from

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[69] Auto-tagging adds a user-related, so-called gclid parameter to the ad link, allowing advertisers to distinguish clicks based on their source.

[70] IP (Internet protocol) address is a unique locator for identifying computers connected to the Internet.

the low-quality ones and provides a "Placement performance report" that enables advertisers to monitor the performance of an individual website, thus facilitating the screening of publishers in the AdWords platform (Google 2009g).

Tuzhilin (2006, 21) names two specific solutions to the uncertainty problem, namely (1) "trust us" approach, or (2) third party auditors. In the "trust us" approach Google tries to convince advertisers of its true intentions to eliminate click fraud (Tuzhilin 2006, 21). Alternatively, third-party auditors can be used to detect invalid clicks (idib.). When using third party auditors there are little issues of non-verifiability because the auditor will get access to parties' information systems, making it impossible to hide relevant information – this information can be used to examine the validity of clicks (ibid.). However, whereas a third party auditor can efficiently monitor Google, it is hard to see that it could reveal the true quality of publishers any better than Google's detection mechanism can. Therefore, whereas third party auditors may reduce the network's moral hazard, they cannot be regarded as a solution for publishers' part.

In contrast, because Google may suffer from the agent's (publisher's) deceptive behavior through the loss of reputation and advertisers' trust, it needs to consider click fraud when contracting and monitoring publishers. The issue involves excluding fraudulent publishers from the network, which is comparable to the screening problem, i.e. the decision of ruling out opportunistic agents. Even though click fraud is prohibited in the contract, Google's ability to distinguish valid clicks from fraudulent ones is limited because it cannot be certain of the click motives, i.e. agent is performing hidden action. Additionally, anonymity of the clicking party, difficulty of verifying the cases of click fraud and complexities of enforcing contractual punishments may mitigate the barriers of opportunism. For example, opportunistic publishers or advertisers may hire or otherwise acquire click capacity (e.g. botnets) from various sources around the world. As legal enforcement is costly and difficult, especially in regions such as China and Russia, the logical way for Google to enforce compliance is to delete fraudulent accounts and to ban fraudulent users from its network. This also means that Google is unable to retrieve the money credited to advertisers.

From the agency perspective, all of Google's methods are in fact reactive, as agents are not judged before contracting but afterwards. Although Google's method to filter out click fraud is imperfect and based on post-contractual analysis, it represents a valid approach in determining the agent's integrity which is, undeniably, difficult to assess in the online environment labeled by anonymity, distance and practical difficulties of contract enforcement. Yet, screening agents prior to contracting might further reduce the problem of click fraud – this could be done e.g. by applying PageRank[71] as a part of

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[71] PageRank is an algorithm used to rank search results; it puts heavy emphasis on the website's reputation (PR value) which is determined by the volume and quality of external links pointing to it (see e.g. Brin & Page 1998).

the screening algorithm to estimate publisher's trustworthiness.

Consistently with the previous discussion, Mungamuru and Weis (2008, 188) who studied the phenomenon of click fraud, concluded that "it is not in the network's interest to let click fraud go unchecked". They also made two additional remarks (ibid.):

1. "Networks may gain a competitive advantage by aggressively fighting fraud."
2. "When networks fight against fraud, it is the high-quality publishers that win."

In particular, fighting click fraud provides a competitive advantage by improving the network's quality image in comparison to other networks (Mungamuru & Weis 2008, 188). Finally, the last notation is important – although Mungamuru and Weis refer to cost savings that the keyword auction's quality mechanism creates for high-quality publishers, fighting fraud also improves the general quality conditions in the market, thus reducing the risk of adverse selection. This will be discussed in Chapter 4.3.2.3.

Overall, click fraud is a considerable issue in search advertising, to the extent that it is perceived as a threat to the very future of the industry (Subirana & Wright 2007, 43). In particular, it endangers trust between advertisers and Google – if a large share of clicks would be revealed fraudulent, advertisers would naturally become more cautious in their spending, or even terminate their relationship with Google. This is why Google is taking click fraud seriously, e.g. by releasing the "Ad traffic quality resource center" to increase transparency of the click fraud detection mechanism as well as educate advertisers in related matters (Google 2009e). Relating to this, Google has been accused secretive towards both advertisers and publishers, particularly for providing little explanations of particular click fraud cases (see e.g. Tuzhilin 2006, 41). However, detailed information on the screening algorithm is not provided because through access to this information "the unethical users can gain additional insights into how Google invalid click detection methods work and would be able to ‚game' their detection methods much better, thus creating a possibility of massive click fraud" (ibid.). Fighting click fraud, therefore, involves some withdrawal of information, although the outcome is that information asymmetry between advertiser and network is, in fact, increased instead of being reduced.

4.3.2.1.2 Problems of free exposure and free traffic (advertiser hiding information)

Although click fraud as a case of moral hazard relates to each actor participating in the exchange, it is most commonly associated with unethical publishers. The following discussion, in turn, concentrates on advertiser's particular types of moral hazard. In spite of the network's role between publishers and advertisers, the advertiser may turn to opportunistic behavior by hiding information or actions to avoid paying for advertising space, resulting in "free exposure" in CPC and "free traffic" in CPA. In

particular, advertiser's moral hazard is to put on display ads that are designed to minimize clicks, while maximizing exposure in the attempt of obtaining visibility and impressions without paying for the advertising space. For example, the ad of a car manufacturer could suggest visiting a local dealer for best prices – if users notice the ad but do not click it (under CPC), the publisher receives no compensation for delivering the advertising message while the advertiser has received exposure free of charge.

This behavior is relevant under both the CPC and the CPA model. The free impressions and free traffic problems, respectively, involve in fact both hidden information (advertiser's unwillingness to share conversion data) and hidden action, which may be designing ads that create brand value but not encourage users to click them, or by designing landing pages or websites that have little relevance to the ad, thus decreasing the possibility of conversion and the need of compensating for the advertising space while directing visitors to other purpose than conversion action – therefore, the advertiser receives free traffic. The risk of hidden information has been examined by Mahdian et al. (2007, 551), according to whom, the "PPA model assumes that the advertisers voluntarily provide the action data to the publisher". Despite of this assumption, there can be seen three reasons for advertisers not to report truthfully to the publisher, including (Mahdian et al. 2007, 551):

a. *Strategic reasons* – the advertiser may provide false reports to increase his utility. In other words, because the advertiser is charged per action, he will benefit from not reporting those actions truthfully.

b. *Cost reasons* – the advertiser faces cost in collecting action data, which may have a discouraging effect for collecting this type of information.

c. *Competitive reasons* – the conversion data can be seen as confidential information that has competitive value, therefore advertisers might not be willing to share it to full extent.

The importance of conversion data in the CPA model arises from the fact that clicks will result in zero cost, and publishers are paid only for conversions – since the conversion takes place in the advertiser's website, he has an incentive to hide the information to avoid compensating publishers. In other words, it is a special case of moral hazard. In contrast, some degree of free impressions and free traffic is inherently associated with all performance-based models – this is because any performance below the maximal CTR of CVR (100% click-through or conversion) results in wasted impressions or wasted traffic, respectively. As typical click-through and conversion rates are considerably lower than this, free impressions and traffic are always present. However, this relates to determining unit-based prices for clicks and conversions to compensate publishers for the risk of low performance, discussed in the next chapter.

The problem of free exposure and traffic is aggravated if the network lacks incentives or ability to control malicious advertisers – e.g. if the advertiser is paying the

network a fixed fee but to publishers based on performance, the network has a smaller economic incentive to verify performance data than if the data was directly tied to its own revenue. However, the network has a *relational incentive* to do so because, should it not provide performance data, it would risk publishers switching to competing networks. For example, most CPA networks share performance information (e.g. average commissions paid by advertisers) with publishers. In Google's CPC model, the advertisers' performance is controlled by favoring well-performing advertisers in the keyword auction, measured by past performance of the advertiser and the bidded keywords. Nevertheless, because the advertiser's performance affects publishers' revenue, a high degree of trust is required from the publisher to the network's screening abilities – otherwise, low-quality advertisers receive free impressions. Advertisers, then again, require network screening to reduce click fraud, as discussed previously.

4.3.2.2 Risk and revenue sharing

Essentially, the Google AdSense network is based on a revenue sharing contract between Google and publishers. As explained by Subirana and Wright (2007, 36): "After setting up an AdSense account, advertisers copy and paste a block of Google HTML and targeted ads start showing up on their website. When a user clicks on an ad, the website owner gets paid" – this acts as an incentive for the publisher.

More precisely, the payment is a share of the revenue received from the advertiser. The media will also need to trust that Google shares the generated advertising revenue fairly, matching the value produced by each individual site with the proportion of total ad revenue. Google coordinates the revenue sharing, defining how the value pie is shared between channel members. Google also designs an incentive scheme for the agents, encouraging them to avoid opportunistic behavior and to maximize advertising performance. Resulting from this, Google's moral hazard (hidden action) in economic sense would be taking a disproportionate share of revenue, i.e. not matching Google's contribution or created value. This risk is enhanced by Google's information advantage, especially because Google does not disclose the percentages of revenue sharing to publishers (hidden information) – therefore, it is difficult to assess whether it acts opportunistically by holding a disproportionate share of revenue; at least, there is place for uncertainty. However, a bigger issue is that Google has information on the exact revenue earned by the network – i.e. the information asymmetry favors Google – but it does not disclose the part of content network in total earnings, nor the percentage of revenue per click shared with publishers. Further, as Google knows and controls the revenue of content partners entirely, Google's risk over "fair dealing" is sharply reduced, whereas the publisher faces uncertainty over the fair distribution of revenue.

Finally, by withholding information on revenue sharing, Google defenses against competing networks who, if the information was public, could use it to offer better commission plans to publishers in order to encourage network switching.

Overall, performance-tied incentives will induce the publishers to place ads on effective positions as oppose placing them where they would be least noticed by the site visitor – this risk is greater if the payment is assigned on cost per impressions (CPI) basis (however, in CPM model the positions are usually determined with the price). Additionally, advertisers often introduce progressive compensation plans in the CPA model – in other words, the more the publishers help to sell, the higher will be their commission percentage. This is done to increase the commitment of the most profitable publishers. The percentage relates to publishers' risk behavior so that risk-evasive publishers require higher percentage of shared revenue than risk-neutral or risk-seeking ones – this is because they face the risk of losing advertising revenue if the advertiser is unable to convert the delivered traffic (see more in Chapter 4.3.2.2).

The differences between CPC and CPA models arise due to their motivational effects – generally, it is logical to assume that higher commission rates increase the publisher's incentive to perform in the advertiser's interests. It also seems reasonable to assume that when the marginal revenue, or incentive, from clicks or actions is linear instead of progressively growing, publishers' motivation of improving their performance is smaller than if rewards would grow progressively. Therefore, progressive incentive schemes motivate publishers' efforts in optimizing their performance. Consistently, higher commission rates for the most productive publishers are also likely to increase their commitment, as the advertiser's importance as a source of revenue increases. Money will be received only based on performance which gives also the publisher an incentive to not only perform well but also to monitor Google's performance in the common contract – a poor economic performance compared to alternative networks is likely to reduce the publisher's satisfaction with Google and promote switching.

Generally, a publisher accepting a CPC or CPA model accepts at the same time the risk of losing advertising revenue. This opportunity cost equals to the revenue that the content provider could receive (e.g. by CPM basis) should he be paid regardless of his or advertiser's performance. In a case of poor conversion performance by the advertiser (under CPA), the publisher will end up paying the opportunity cost of not opting for flat fees or CPI. Similarly, failure to provide clicks in CPC will result to paying the same opportunity cost. As such, the loss of advertising revenue represents the publisher's opportunity cost when accepting rent basis for advertising space.

Further, in the CPA model, a publisher has no control over the advertiser's ability to convert the delivered traffic. Because the conversion will affect publisher's revenue directly, the publisher's risk is higher in this model – if the advertiser fails to convert traffic, both parties lose, but the loss is greater for the publisher because he has given

away "free traffic" and "free impressions". Therefore, the required level of trust in the advertiser's competence will be higher in the CPA model since the publisher's compensation depends, to a great extent, on the advertiser's performance. Therefore, the publisher will set requirements for the network to pre-qualify trustworthy advertisers and to present accurate data relating to their historic performance.

Relating to the delegation, advertiser faces the risk of inefficient advertising, leading to the loss of advertising investment. This may occur if the network distributes ads inappropriately (e.g. wrong audience, low reach or frequency, spamming) or the publisher places ads carelessly (e.g. below the fold). Essentially, performance-based models reduce the advertiser's risk by sharing some of it with the network and publishers. The CPC model reduces uncertainty and risk of the advertiser because he only pays for realized clicks that indicate visitors' genuine interest, instead of paying for impressions that face the problem of banner blindness. The risk is even lower in the CPA model where the interest has to turn into a purchase before any compensation. In the CPA model the advertiser's risk of inefficient advertising is, in fact, minimal (Benediktova and Nevosad 2008, 71):

> *"Affiliate marketing* [i.e. CPA] *decreases the risk for merchants, because they will not waste their money on advertising that is not efficient. Thus, they are willing to advertise at websites that would not be taken into consideration otherwise."*

Based on the fact the advertiser only pays for the advertising space when he has received high-quality traffic (that has e.g. placed an order), the risk of losing money on inefficient advertising is mitigated. This leads to the logical conclusion that the requirement for trust by the advertiser towards the publisher is lower, as pointed out by Benediktova and Nevosad. Consequently, there is no need for screening the publishers *ex ante* (in the performance sense; otherwise, there may exist opportunistic publishers that need to be eliminated as discussed below). In contrast, the efficiency risk is greater in the CPC model because, even if clicks are correctly measured, quality[72] of the delivered traffic is uncertain, risking low conversion rates and loss of investment. Further, because the network (or publishers) may behave opportunistically beyond the advertiser's perception and control (cf. click fraud), assessing partners beforehand may become relevant in the CPC model. However, it must be noted that also the CPA model is associated with unethical methods, such as spamming, trademark infringement, false advertising, cookie cutting, and typo-squatting (Wikipedia 2009d). For example, if a high-quality advertiser is receiving bad-quality traffic (from a low-quality publisher), he will suffer negative consequences in relation to high-quality publishers. This is because low-quality traffic will not convert, thus reducing the advertiser's conversion rate.

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[72] Here: willingness to buy.

Because high-quality publishers are very selective in choosing a CPA advertiser, they will look at historical CVR data to find out which advertisers have performed better than others[73]. Now, if a high-quality advertiser CVR is reduced due to low-quality traffic, he will lose position in comparison to other advertisers, and is likely to not be chosen by the high-quality advertiser. In other words, there is a failure in signaling advertiser's true quality, arising from not bad-quality advertisers but in fact from bad-quality publishers. As a result, there is one less high-quality agent that will not become chosen (cf. adverse selection). Therefore, although the risks of inefficient advertising and click fraud are mitigated, other types of risk, such as negative brand attention, trademark issues and technological type of opportunism may take place.

In contrast, the CPA model adds the publisher's risk – especially when the click-through rate is high but the conversion rate low, publisher loses revenue compared to the CPC model. This can be formulated as follows:

$$O_P = (C - A) \times R_U ,$$
<div align="right">4.1</div>

in which O_P indicates the publisher's opportunity cost of choosing CPA instead of CPC; C is the number or clicks; A number of actions and R_U revenue per unit (click or conversion, respectively). Assume that the revenue per click is equal to revenue per action and, therefore, the number of clicks less the number of actions (times marginal revenue) forms the publisher's opportunity cost (i.e. he has foregone this revenue for agreeing to CPA instead of CPC). The opportunity cost is higher than zero for every value of A that is below any value of C, and becomes larger when the negative difference grows. This is because when the publisher delivers traffic to the advertiser, every click must lead into action or otherwise the publisher pays the opportunity cost (i.e. is not paid) which grows with every wasted click, or "free traffic" given to the advertiser. To compensate the publisher's higher risk, the advertiser is in practice obliged to offer higher commission rates in the CPA model. Therefore, compensation per action is commonly higher than compensation per click. However, the advertiser's cost per sale (CPS) increases compared to a situation in which no additional risk premium would be necessary. In other words, advertiser's marginal cost of customer acquisition rises when the percentage of commission is increased, *ceteris paribus*. As a result, the advertiser may be required to place attention on the customer's price sensitivity due to additional costs. This is elaborated as follows.

Consider the fact that conversion in fact begins with user clicking the ad, moving from "search funnel" to "sales funnel", i.e. from the publisher's website to the

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[73] Of course, there are other factors besides conversion rate that influence publishers' selection of advertisers, e.g. site's compatibility with publisher's content and audience, but conversion is without a doubt among the most decisive criteria since it is directly tied to publisher's revenue.

advertiser's site. For example, suppose that out of 10.000 visitors exposed to the ad, 1% clicks it while others either leave it unnoticed or ignore it. This would result in 100 visitors – assuming a similar conversion rate of 1%, only one person places an order of performs other action desired by the advertiser[74]. If the advertiser has paid based on CPC of $1.00, his customer acquisition cost has been $100 per customer! In contrast, if he has pays based on CPA of, let us say, $30 per conversion, the difference of $70 will remain his profit compared to the CPC model. In contrast, the publisher has lost the same amount - therefore, choosing a compensation model is a zero-sum game based on expected performance, risk sharing and offering sufficient incentives.

Average CPC in AdWords' content and search network was $0.76, based on data collected from five different industries in the US in January 2008 – highest CPC was in finance, $2.70 (search network) and lowest in retail, $0.24 (content network) (Efficient Frontier 2008). All industries examined – namely retail, auto, dating, travel and finance – had higher CPCs in search than content network, with the exception of auto industry whose figures were $0.57 versus $0.58, respectively (ibid.). However, it seems that the search network is more valued by advertiser and, therefore, respective bid prices are higher than in the content network – a part of this can be credited to search's steady performance while a part of the difference is likely to arise from the risk of click fraud, considerably smaller in the search network due to the fact that this revenue is not shared with publishers and, therefore, they have smaller incentives to commit click fraud. The situation is paradoxical in a sense that, although there are more middlemen in the content network, the revenue for keywords is actually smaller than in search network whose revenue solely Google keeps. This leads to two implications – first, Google has a moral hazard of promoting search over content network in order to increase bid prices in the search while signaling the content network as a "second choice" for advertisers. Second, the erosive reputation of the content network, caused by click fraud by opportunistic publisher, lowers the revenue of high-quality publishers because keyword prices would rise higher if there was no risk of click fraud for advertisers. Therefore, low-quality publisher hurt not only advertisers, but also high-quality publishers.

Based on the previous calculations, it is easy to understand that online advertising is all about masses. In fact, the example of 1% CTR is assumed too high, as banner ads typically have CTRs as low as 0.2% (eMarketer 2009). In the previous example, this figure would only attract 20 visitors, in which case any conversion rate below 5% produces zero customers[75]. Thus, to tackle the problems of ad clutter and banner blindness in the search funnel advertiser needs to create attractive copy texts or banner ads that are noticed and encourage clicking. In the sales funnel, the advertiser's focus is

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[74] Calculation: 10000 x 0.01 x 0.01 = 1.
[75] Calculation: 10000 x 0.002 x 0.05 = 1.

required on conversion efficiency e.g. by improving landing page quality – considering that visitors draw conclusions of the website as fast as in $1/20^{th}$ of a second (Lindgaard, Fernandes, Dudek & Brown 2006), the offered benefits must be readable instantly.

While the increase in unit prices (as explained above) will mean higher costs for the advertisers, high-quality publishers (in CPC and CPA) in fact benefit from it. This is because high-quality publishers that have a higher click-through rate earn more than the underperforming ones (under CPC). Additionally, under CPA, high-quality publishers provide the right type of visitors that are genuinely interested in the advertiser's products and, therefore, are more likely to convert. As the efficiency of CTR and CVR increase, so do the publisher's earnings and the relative gain from the risk premium. In contrast, under CPA, the loss of high-quality advertisers equals high-quality publishers' profit because it is incrementally associated with unit-based tariffs – in other words, the more they sell, the more is their differential loss, a paradoxical situation made true by higher unit-prices for clicks and conversions.

4.3.2.3 *Adverse selection*

As discussed in Chapter 4.2.2, adverse selection is an agency problem in which the principal, unaware of agents' true quality, selects a low-quality agent – thus, performing the delegated task will suffer. Additionally, adverse selection may have diverse negative effects in the market. Generally, conditions for adverse selection include asymmetric information and varying degree of low-quality providers. Quality in the online advertising context may refer to quality of publishers, advertisers, or the network.

The quality of publisher involves three dimensions which are: (1) the volume of impressions his website is able to mediate, (2) the volume of traffic he delivers, and (3) the type of this traffic. In particular, number of impressions indicates how popular the website is; volume of traffic is the amount of visitors the publisher is able to provide to the advertiser; and type of traffic refers to genuine interest of these visitors to the advertiser's products (cf. click fraud). Additionally, high-quality publisher do not click ads on their own website, i.e. commit click fraud.

In contrast, advertisers' quality is determined by (1) the ads they deliver, (2) their ability to convert traffic, and (3) providing accurate action information. Generally, low-quality of online ads is related to the larger issue of advertising clutter which refers to consumers being exposed to an excessive number of ads, reducing the capability and willingness to process them and, consequently, their performance (Wikipedia 2009e). In a study by Marketing Sherpa, 75% of publishers found ad clutter as a problem in online advertising, being the first concern (Marketing Sherpa 2008, 16). The second issue was low-quality ads coming from advertisers, with roughly 56 percent of respondents

reporting negative experiences (ibid.). This is relevant issue considering the principal–agent theorem, because publishers are, to some extent, unable to verify the quality of ads delivered by the agent before they are shown on the website (see e.g. Mike On Ads 2008). Because publishers have limited control over the quality of ads distributed on their website, the only way to remove the risk of bad-quality ads is by exiting the network, through which they would also lose the proper quality ads[76]. Additionally, if the network processes ads automatically without controlling quality, the risk of distributing low-quality ads rises. This might lead to problems of adverse selection (as discussed previously), and may become a risk for publishers' non-economic objectives such as editorial integrity.

From the advertisers' point of view, adverse selection can be seen in online advertising by the loss of buyers and sellers, resulting from the abundance of low-quality ads; this may be explained as follows. Assume that there is a high volume of low-quality advertising, a case of (low-quality) advertising clutter. Eventually users grow weary of this poor advertising and start to ignore it, or block it entirely through technical means. This will result in increasing banner blindness, as users are reluctant to view or click ads, avoiding any websites with excessive bad advertising. Advertisers, then again, become unsatisfied with the performance of their online advertising investment and decide to shift their efforts to other media. Additionally, visitors switch to websites with little or no advertising, which causes publishers showing ads to lose visitors. As a result, those publishers decide either to stop showing ads at all, especially if the website's primary purpose is other than producing ad revenue, or are forced to close down the service due to lack of revenue. Thereby, both the sellers and the buyers withdraw from the market, except low-quality actors who are not concerned with quality issues: low-quality advertisers only desire impressions or clicks at any cost and resort to spamming and other deceptive behavior to attract "suckers"[77], whereas low-quality publishers are not concerned with their visitors' satisfaction or the quality of the ads. Therefore, the market experiences a process of adverse selection.

High-quality advertisers will also suffer from low-quality ones if the visitor is unable to make a distinction between them. This relates to the fact that users learn from being deceived and become suspicious – therefore, a misguiding advertisement may work one time and users may click (producing undeserved benefit to the advertiser) but when they discover that the ad e.g. redirects to other website than led to believe, they change their behavior and stop viewing and clicking ads. As a result, the greatest losers are high-quality advertisers who had no deceptive agenda. However, ad quality is a complex matter – besides the content, it contains the visual impression and users draw

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[76] Google has addressed this problem by introducing Ad Review Center (Google 2007).
[77] Term used in prisoner's dilemma to describe naive, overly trusting behavior (cf. sucker payoff).

conclusions based on both of them. For example, advertisements that look "cheap" and include misspellings or other suspicious factors are likely to not be trusted, whereas professionally looking ads are more likely to provoke trust. However, users are aware that even these ads may be deceptive because the ad's message ("customer promise") is not necessarily consistent with the landing page. Therefore, high-quality advertisers may tackle this problem by paying attention to the visual appearances of their ads as well as landing page's consistency with the advertisement content.

Moreover, high-quality advertisers may suffer economically from the presence of low-quality advertisers, because the latter increase prices by (a) increasing market demand for ad space and (b) causing publishers to increase ad space tariffs in the fear of bad-quality ads. This is because if advertisements are low quality, the placement and publishers' other actions will not affect their performance (assuming that users judge their quality *ex ante* and impressions are wasted due to low quality). Therefore, the performance-based commissions must be set higher to satisfy publishers' revenue objective compared to other compensation methods (e.g. CPM), of which high-quality advertisers yet again suffer the most because the same amount of visitors they receive would cost less without this quality premium (see previous chapter). Further, in the short term, low-quality advertisers may reap financial benefit from click fraud – as noted by Tuzhilin (2006, 10), "unethical advertisers or their partners not only hurt their competitors financially by repeatedly clicking on their ads, they also knock them out of the auction competition for the rest of the day by depleting their advertising budgets and thus improving their positions in the sponsored link lists and also paying less for their own ads." Therefore, click fraud targeting high-quality advertisers puts them "off the market" and users are exposed to the ads of low-quality advertisers instead.

Relating to publisher's quality, there exists a particular risk of adverse selection. Suppose that the performance level between publishers is likely to have strong variance, dividing them into high-quality and low-quality providers. This is based on the differences in their efficiency to acquire and redirect appropriate (high-quality) traffic to the advertiser's website. Since the CPA commissions are set for the publishers' average ability, instead of considering the publishers' uneven capability distribution, those publishers that are able to increase the amount of converting clicks beyond the average value obtain relatively higher commissions than they would if the commission rate would be set to match their particular performance; again, assuming that there would be no additional risk compensation. In this case both the advertiser and publisher would perform well and the loss of waste traffic would be minimized. This obviously encourages the publishers to benefit from the risk premium by overcoming the average market performance, thus optimizing their own revenue; although this will not optimize the channel value. In conclusion, the lack of information about the quality of publishers forces the advertiser to set incentives based on average estimates instead of segmenting

them according to the variance in quality. However, there is a method advertisers may use to counter this effect – that is to create progressive performance plans, so that the base level remuneration will be set lower than the average value would be, and then introducing increased incentives for the best performing (higher quality) publishers to compensate the loss of average commission – in a sense, advertisers divide publishers into groups based on their risk factor and value (cf. insurance industry).

Regarding adverse selection, quality is difficult to maintain if money is the only factor in ad delivery. This is because low-quality advertisers could easily hi-jack the market with a sufficient amount of investment However, Google has noticed this and distributes ads not only based on keyword bids but also on expected quality, i.e. Quality Score (see Chapter 3.2.2) that punishes poorly performing advertisers (interpreted as low quality) and rewards those advertisers whose ads are able to create clicks and, therefore, are of high quality. However, quality is hard to measure in Google's case because advertising quality is difficult to measure quantitatively and even qualitatively, being a somewhat subjective matter; and the assessment of quality needs to be done before the ad delivery takes place even if there is no available performance data on the specific advertiser (e.g. new advertiser). In this case, Google uses reference data on the keyword's performance when earlier used by another advertiser (see APPENDIX 3). However, it is possible that the quality estimate may is falsified if high performance is achieved by deception – e.g. an advertiser may promise "free" rewards to the visitor in the ad but in reality offer something else such as costly service. In this case, even if the performance (CTR) is high, the ad cannot be characterized as high quality.

Adverse selection is a true and potential risk in the market that categorically turns against high-quality actors while benefitting the low-quality ones. Ultimately, the end customers will also suffer if the advertising market degrades. As noted by Akerlof (1970, 495): "The cost of dishonesty, therefore, lies not only in the amount by which the purchaser is cheated; the cost also must include the loss incurred from driving legitimate business out of existence." Therefore, the costs of adverse selection are not limited to losses faced by high-quality providers but touch the whole market. Further, quality issues are aggravated by the fact that both the advertiser and the publisher have limited control over quality when delegating tasks to the network.

The control problem relates not only to publisher's inability to monitor the quality of advertisers (explained in Chapter 4.3.2.2) but, reversely, to advertiser's inability to control publisher's quality. This can be defined as the problem of "free dissemination", referring to the fact that there is very little control over the quality of websites where the ads will appear. The problem involves two types of risks, namely (1) bad placement and (2) bad traffic. First, the risk of bad placement arises because Google allows publishers to place the ads freely on their website – therefore, they may place them poorly, in which case users ignore them and the advertiser receives no true exposure despite of

nominal impressions (page-loads). Further, the publisher may place ads so that the visitor has no choice in navigation but to click them – this is the so-called ad trap – or disguise them as regular links in order to lure visitors into clicking them. Widely regarded, this behavior is a type of click fraud performed by low-quality publishers. However, as stated, also non-opportunistic publishers may place ads poorly (e.g. due to lack of experience), although they will have no true incentive to do so under the CPC model. Bad placement will cause that the advertiser's ad impressions rise even though the ad is not noticed by visitors – therefore, the advertiser's CTR performance will decrease leading to disadvantage in the keyword auction. Similarly, the problem of free dissemination relates to the quality of incoming traffic under the CPA model – if the received traffic is of poor quality, it will reduce the advertiser's conversion rate, reducing the competitiveness against other advertisers.

4.3.3   Solutions to agency problems in online advertising channel

4.3.3.1   Economic and relational solutions

The first able solution in resolving principal–agent problems associated with opportunism, such as moral hazard, is to introduce common objectives or otherwise turn opportunistic behavior costly, so that the risk of outcomes would be carried by both parties, as evenly as possible. It is logical to assume that if opportunistic behavior would harm not only the principal but also the agent's own interest, the risk of opportunism greatly fades. As put by Eisenhardt (1989, 60), "the rewards for both depend on the same actions, and, therefore, the conflicts of self-interest between principal and agent are reduced". This is derived from the same logic than the "cake division" problem, suggesting that tying the outcome of the first mover's action to the second player's action sharply reduces the opportunism of a rational player (see Poundstone 1992, 43). Assuming that the agent is rational, he will limit his personal profit-seeking in favor of mutual interests.

Consequently, in order to reduce the risk of opportunism and to enhance collaboration between online advertising channel partners, the relationships should be governed so that opportunistic behavior would harm all parties. For example, it has been proven that click fraud hurts the entire industry in the long run (see Chapter 4.3.2.1). As such, it is a question of conveying the message of hazardous behavior across the channel so that all parties understand the consequences of such actions, and excluding those agents from the network that are unwilling to comply. The problems in solving

quality problems relate closely to the variables presented in agency theory, e.g. opportunism, information asymmetry and bounded rationality. The rationality problem, in particular, is difficult to tackle as opportunistic behavior cannot be made completely irrational due to the quality difference in agents and their decision-making – in other words, low-quality agents will choose an opportunistic path despite of long-term harms due to their different perception of rational behavior (i.e. long-term orientation).

Another solution to the problem is to apply performance-related incentives – as proposed by Eisenhardt (1989, 60): "When the contract between the principal and agent is outcome based, the agent is more likely to behave in the interests of the principal." This is backed by Laffont and Martimort (2002) who argue that in order to resolve the problems of moral hazard and tenuous contracting, the principal has to assign sufficient compensation to the agent to guarantee his compliance. However, it must be noted that financial incentives may also carry a social cost that can, in fact, be detrimental in the long-term goal accomplishment[78]. This is because tying the agent primarily with money encourages short-sighted behavior and does not remove the risk of opportunism, while also leaving the agent free to seek better compensation elsewhere. In contrast, if the ties between agent and principal are social or psychological, the level of commitment may be higher and the agent may react less aptly to economic incentives outside the relationship. This takes place if socio-psychological ties overweigh economic ones (i.e. agent's self-interest is limited), so that in reality not all agents prefer economic rationality. Thus, ensuring compliance may require the principal to adopt incentives that are not based solely on financial grounds but include relational, psychological and social gains, such as feelings of security and continuity, high degree of trust and satisfaction, promoting commitment, benevolence and integrity. This is necessary if we are to recognize that decision makers are "biological organisms", as stated by Simon (1955, 101), motivated by factors outside the financial scope.

The advantage given to high-quality advertisers is an example of economic incentives applied in the online advertising channel. In other words, rewarding performance between Google and advertisers in the online advertising channel takes place in the keyword auction through Quality Score which affects minimum bids by either lowering them (for high-quality advertisers) or increasing them (for low-quality advertisers) – thus, giving an incentive to improve text attractiveness, ad relevance, and landing page quality which directly affect the ad ranking. Because Google does not distinguish between high-quality and low-quality advertisers before contracting, using the approach of Quality Score is needed to establish such assessment, based on the advertiser's true performance. If low-quality advertisers would outweigh high-quality

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[78] The potential social cost of economic incentives is already noted by Smith (1776): "Workmen […] when they are liberally paid by the piece, are very apt to overwork themselves, and to ruin their health and constitution in a few years" (according to Laffont & Martimort 2002, 9).

ones, this would reduce the willingness of high-quality publishers to accept advertisement in their website (in the belief that they are all bad), resulting in a situation where high-quality publishers would leave the network while the low-quality publishers would remain. Finally, this would have a negative impact on the high-quality advertisers in the fear of click fraud and low-quality traffic.

Referring to social incentives, a high degree of trust between partners may reduce the contracting problem as limiting opportunism with contracts becomes less relevant – following Dwyer et al. (1987, 23), "it might be impossible to cover all contingencies in a formal contract for sustained cooperation, but if the partners have trust it may be unnecessary to cover all contingencies." In other words, a high level of confidence allows partners to exchange sensitive information and to rely on informal agreements and incomplete contracts, whereas a low level of confidence requires advanced control mechanisms (e.g. complex contracts) (Schary & Skjøtt-Larsen 2001, 74). Thus, when trust exists, the risk relating to opportunism is limited because both parties "will refrain from the use of power or exploiting changed circumstances to obtain individual benefit" (Nielson 1998, 445). In the online advertising channel, the network's role in maintaining trust between advertisers and publishers is critical, especially when parties face a high risk of opportunistic behavior. In publisher's case this relates click fraud that the network must be able to eliminate – in advertiser's case, it is the flow of payment that the network needs to supervise; particularly in the CPA model, where advertiser's risk of holding back information or payments is relevant. In Google's case, the network will not only take the role of an escrow but the role of the leading channel member, facilitating the control over both publishers and advertisers. If Google is seen as an objective party that is able to control other members' hazardous behavior, the perceived trust among other channel members is likely to be high.

Commitment of both parties may also reduce agency problems. Quoting Fontenot and Wilson (1997, 6): "The more committed partners are to the relationship, the greater the chance for each firm to achieve their individual and mutual goals without the overshadowing risk of engaging in opportunistic behavior." Generally, relationship commitment refers to the degree of partners' willingness to develop a stable relationship and to make short-term sacrifices for maintaining the relationship in the long-term (Myhr 2006, 158). Particularly, commitment indicates parties' willingness to (1) preserve relationship investments through cooperating with known partners, (2) resist attractive short-term alternatives in order to maintain expected long-term benefits of the current relationship, and (3) accept potentially high-risk actions based on the trusting belief that partners will not act opportunistically (Morgan & Hunt 1994, 22).

Commitment can be increased if the parties' (1) long-term interests are aligned, and

(2) long-term orientations are compatible. Let's explore this argument. Therefore, the self-interest must be bound in order to maintain the acquired benefits[79]. However, if the long-term orientation of actors considerably differs, increasing commitment is difficult in spite of compatible goals. This is because short-term oriented agents are willing to seek better compensation elsewhere, whereas long-term oriented agents become more easily committed to the relationship – a long-term oriented agent is assumed to be rational when he "refrains from capitalizing on attractive short-term alternatives in favor of the expected long-term benefits" (Fontenot & Wilson 1997, 7). Finally, it is important that the actors agree on the fact that cooperation is beneficial – it is possible that while this is obvious for one party, another one sees the situation differently e.g. due to lack of information on potential benefits. Therefore, the principal must take action to ensure that goal consistency is achieved also at the perceptual level.

In general, publishers' commitment to the network can be seen as a function of (1) alternative sales routes, (2) degree of website's commercialization, and (3) importance of advertising revenue to the publisher. If the publisher resorts to many ad networks in selling the advertisement space or if he has other sales channels, the commitment is likely to be lower than if it is the only sales force (in which case the publisher is more dependent on the network). However, if the network's share as a source of revenue greatly exceeds other sources (e.g. other networks, direct selling), the commitment is likely to be high as well on similar basis. The second factor, however, may counter this because some goals of the publisher do not involve earning. For example, the publisher may maintain the site out of personal interest (e.g. hobby site) and is therefore less dependent on the advertising revenue than a publisher who has created the website for financial purposes. Finally, even if the publisher emphasizes commercial objectives, the role of advertising revenue itself may be small, for example because the primary source of revenue is something else (e.g. e-commerce). Publishers may also deliberately attempt to reduce their dependency over a particular network to avoid financial lock-ins.

Finally, increasing the ability to verify and control the agent's behavior may resolve agency-related problems. Quoting Eisenhardt (1989, 60): "When the principal has information to verify agent behavior, the agent is more likely to behave in the interests of the principal." This is because the agent can no longer hide information or the quality of its actions from the principal. Based on revealed information, principal may also achieve a greater control over agent's behavior. This is important because the use of power has a steering effect in agency-theoretic relationships (Mosteller 2006, 257). Mainly, the principal will benefit from a power advantage by directing the agent's behavior to receive a favorable outcome, while eliminating the opportunities for hazardous behavior and the agent's inherent resistance to use of power. In the agency

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[79] Note that this does not mean eliminating opportunism, but limiting the risk.

setting, using power aims not only at restricting the agent's opportunistic behavior but also at reducing the likelihood of adverse selection. More precisely, quality issues give the principal an "incentive to punish a cheating supplier by dropping its product, encouraging producers to maintain high quality" (or vice versa) (Choi et al. 1997, 161). Thus, improving agent's quality is a logical motive for the principal to use power – e.g. Google drops cheating publishers out of the network. The need for efficient monitoring and control is increased by the fact that anonymity and distance in online environments may lower the agent's anticipated costs of opportunism (Ching and Ellis 2006, 559).

Overall, it can be stated that very little relational incentives are applied to publishers by Google. As noted by an AdSense publisher: "We get very little help, advice, tips, stats, and a very limited interface." (Webmasterworld.com 2007.) The relational support seems to be leaning towards advertisers who are provided with more advanced reporting, ad management and support functions. However, this is logical considering that the advertisers are, indeed, the source of revenue and therefore require higher level of service and, second, because publishers tend to be more knowledgeable in terms of technology. However, it can be stated that advertisers are given a wider array of tools for information processing and control, including e.g. position preference to increase the likelihood of a desirable keyword position, smart pricing to automatically find high-quality publishers, placement report showing data on individual publishers' performance. Advertisers can also use negative keywords to block out undesired themes (e.g. seller of a product excluding search phrases containing "free").

4.3.3.2 Equilibrium of interests – from conflict to common goals

As established, there are several risks for conflict in the relationships between members of the online advertising channel, arising from conflicting interests, uncertainty and unfavorable behavior of channel partners. This section focuses on finding the main differences and similarities by first examining each actor's interests and then proposing a compromise (equilibrium).

Generally, publisher's interests include guaranteeing user experience while maximizing ad revenue. There exists a natural conflict between these two objectives because too much ads generally hinder user experience. Thus, the attempt to maximize ad revenue holds the risk of reducing ad performance and *vice versa*. This is mainly because the advertising space in the website layout is limited; if shared between many advertisers, each will receive small proportion, making it more difficult for them to differentiate from each other. This problem is closely associated with banner blindness and ad clutter. Further, because publishers are primarily interested in improving user experience as a competitive means against other websites, they have a tendency to

emphasize user experience at the cost of developing advertising solutions, which places additional pressure to advertiser's efficient use of advertising space.

Advertisers, then again, have multiple objectives when placing advertisements, including for example brand development, sales promotion, even defensive strategies for obtaining specific keywords central to their business (Feldman & Muthukrishnan 2008, 92). Thus, advertiser's interests relate to the overall goals of the campaign, such as campaign's performance, high return-on-investment (ROI), guaranteeing visibility, additional sales, or increased brand recognition. Particularly in online advertising, advertisers' specific goals may relate strongly to (1) impressions, particularly in relation with brand-related goals; (2) click-throughs which define the amount of ad-generated traffic; and (3) conversions, typically relating to sales objectives. For example, some advertisers may seek to maximize the amount of clicks or impressions, while others optimize their return on investment by targeting only the most profitable audiences. (Feldman & Muthukrishnan, 2008, 92.)

The network's interests, then again, relate to maximizing revenue flow inside the network, because the network's profit is a direct result of this flow. To increase the exchange taking place in the network, more publishers and advertisers are constantly required. In Google's case, there is also a focus on end customers who perform searches – first, consumers have a direct influence because they form the marketing audience that the network will mediate to the advertiser. Second, since the advertiser's revenue ultimately depends on consumers and this revenue is used to buy advertising space from the network, consumers also have indirect influence over the network. Therefore, the primary focus of the search network is on ensuring that advertisements have minimal interference with the user experience. At the same time, it needs to consider the advertiser's and publisher's needs in order to attract a sufficient amount of buyers and sellers in its network. (Feldman & Muthukrishnan 2008, 92.)

Finally, users come to search engines to perform searches, or to content sites because of interest in the content. It is relevant to notice that the nature of the information sought may hold different degrees of commercial value – for instance, when the consumer is looking for work-related information, he may be less receptive towards advertising messages than if he was looking for product-related information, such as shopping opportunities, good deals, or product reviews. In principle, "there are millions of users with different goals and behavior patterns with respect to advertisements", which makes it more difficult for advertisers to distinguish the consumers' state of mind (Feldman & Muthukrishnan 2008, 92). Relating to ads, consumers' interests include discovering relevant information in them while retaining a pleasant browsing experience (Brand Republic 2008). If ads are disturbing, no ads at all would be the maximal utility for visitors, as the distraction created by them would be removed and the actual content of the website would stand out more easily. However, this would allow no compensation

for the publisher, eventually leading to diminishing quality of the content.

The table below summarizes main areas of conflict, comparing nine variables.

Table 13   Conflicts of interest under CPC model

Factor	Interest of advertiser	Interest of publisher	Interest of network	Interest of user
Ad revenue / cost →	Low	High	High	Indifferent
Number of ads →	Low	High	High	Low
Quality of ads →	High	High	High	High
User experience →	Indifferent	High	High	High
Ad intrusion →	High	Low	Indifferent	Low
Landing page quality →	High	Indifferent	Indifferent	High
Ad targeting →	High	High	High	High
Wasted impressions →	Low	Low	Low	Indifferent
Wasted traffic →	Low	Indifferent	Indifferent	Low

Seemingly, there are differences in parties' interests (marked with shades of blue), representing potential areas of conflict. However, many common goals may also be found. First, the quality of ads is marked high for each party, meaning that everyone will benefit from it – advertiser achieves better performance through high-quality ads, publisher and network receive higher compensations and user prefers viewing high-quality ads over low-quality ones. Second, all parties benefit from improving the user experience (although the advertiser is indifferent to it) – this is because a good user experience is likely to improve visitor loyalty, thus guaranteeing consistent exposure for advertiser, steady or increasing flow of traffic for publisher and network.

Whereas minimizing wasteful impressions is a common goal between advertisers and publishers, reducing wasteful clicks is not a priority for all parties, namely for the publisher and the network. This is because their revenue depends on the amount of clicks, while conversion remains as the advertiser's problem. However, in the CPA model the risk of low conversion is carried both by the advertiser and the publisher (but commonly not by the network) which gives the publisher an incentive to deliver high-quality traffic (i.e. interested customers) to the advertiser. In the CPC model, in contrast, the quality of traffic is of lesser concern to the network and publisher, relating to the fact that the quality of traffic does not affect their revenue – in other words, they receive no additional benefit by providing high-quality traffic or penalty for low-quality traffic.

To conclude, a theoretical equilibrium of interests is proposed. Equilibrium of interests is a situation in which each party would get close to its objectives, while sacrificing as little as possible – i.e., indifferent modes will adapt to dominant modes (high/low), and majority decides the outcome of conflicting modes (e.g. two values of

"low" versus one "high" would produce the compromise of "low"). It is worth mentioning that the equilibrium not only deals with resolving conflicts within the online advertising channel but also with creating value to the end customer. Hence, it follows closely the end customer preferences – in fact, the ultimate goal of increasing advertising value can be achieved not only by distributing and serving ads efficiently but also by raising customer attention, interest, desire and action. For this, equilibrium contains following normative guidelines:

Table 14   Equilibrium of interests under CPC model

Factor	Value	Objective
Ad revenue / cost →	High	Maximizing long-term service quality
Number of advertisements →	Low	Minimizing banner blindness and ad clutter
Quality of advertisements →	High	Maximizing click-through
User experience →	High	Maximizing traffic, user satisfaction and loyalty
Ad intrusion →	Low	Maximizing user experience
Quality of landing page →	High	Maximizing conversion
Ad targeting →	High	Maximizing relevance
Wasted impressions →	Low	Maximizing short-term benefits
Wasted traffic →	Low	Maximizing long-term benefits

Reducing the number of advertisements per website – placing fewer ads increases performance because the ad space can be used more efficiently and the users' attention is shared between fewer targets, thus reducing the effects of banner blindness and ad clutter. In this sense, minimizing the number of ads means maximizing their performance – therefore, individual advertisers benefit from performance boost, whereas publishers are not required to compromise user experience.

Maximizing the quality of ads – in a logical sense, advertising quality is the most decisive factor affecting ad performance and ad liking, relating to the effects of ad clutter and banner blindness. Hence, quality should be the main concern for all parties. Generally, high quality refers to an enhanced user experience by making the ad stand out from the competition by including something "special" that adds customer value (cf. differentiation). More specifically, the goal is to increase clickability – this means decreasing the barrier of customers clicking the ad, i.e. by raising interest and offering customer benefits. Also the creative quality is important, including visual appeal and attractive copy texts. High quality can be motivated e.g. by offering incentives such as better ad positions (cf. Quality Score).

Maximizing the user experience is a complex matter, relating to publisher's core competence of developing the service. It relates to matters such as navigation, loading times, visual appeal, structural coherency, etc. Overall, the goal is to increase the

website's popularity, visitor satisfaction and loyalty. Attention to the needs and characteristics of the website's users is therefore required to succeed.

Optimizing ad targeting relates to optimization of ad serving and maximizing ad compatibility with user preferences – more specifically, it refers to contextual targeting that has the potential to match the displayed ad with the customer intent, e.g. by analyzing search keywords or website content. It is more likely that the consumer finds value in ads corresponding with his search interests in oppose to ads that have little or no relevance. Ad serving can be optimized by employing a centralized ad inventory mechanism that allows for flexible, performance-based ad distribution across the media, so that high-quality ads are rewarded and bad-quality ones punished in terms of exposure; while also reducing unnecessary contacts between advertisers and publishers.

Minimizing ad intrusion – this will reduce the likelihood of customer leaving the website due to frustration caused by ads, while increasing the likelihood of the customer actively noticing ads. Intrusion refers to factors such as pop-ups, sounds and such elements which the customer finds difficult or impossible to control and that hinder the purpose of visiting the website and which should therefore be eliminated.

Optimizing landing page – this refers to the fact that after attracting the customer to the website, he has to be convinced to purchase (or perform other desired action). This is not only for the sake of the advertiser but for the publisher as well because in the CPA model, failure to convert will leave the publisher without compensation. Although publishers or the network have no direct interest in conversion under the CPC model, the advertiser's ability to convert will benefit also them in the long run because in case of poor performance, advertiser is motivated to place advertising investments elsewhere.

5   CONCLUSIONS

5.1   Conclusions of study

5.1.1   Overview

The purpose of the thesis was to explore exchange relating to online advertising, including related structures, processes and relationships. The basic presumption was that the delivery of online advertising to websites can be contrasted to distribution channels delivering goods to end customers. This delivery process of online advertisements relies on channel structures and exchange between individual channel members, including advertisers, publishers and intermediaries.

Generally, exchange can be divided into four types, namely (1) *product exchange* (goods, services), (2) *information exchange* (raw data or processed), (3) *financial exchange* (payments, revenue sharing), and (3) *social exchange* (e.g. trust, power) (Håkansson 1982, 24). Each of these types was considered in this study; first, online advertising as a product distributed in the channel was studied in Chapter 3.1.1; second, information flows were discussed in Chapter 3.1.2; third, financial exchange was examined particularly in Chapter 3.3; and, finally, social exchange related to Chapter 4, although it was only superficially covered due to the assumption of economic rationality. Although it must be admitted that some aspects were left out of the study to guard the consistency and brevity of the thesis, it can also be stated that this study offers a comprehensive view to the different aspects of exchange taking place in online advertising, including descriptions on the market where the exchange takes place, as well as the channel which is a system created by actors participating in exchange.

Regarding the limits and validity of the analysis, risks are involved mainly in the deductive and inductive logic applied – although the goal was to cover relevant viewpoints comprehensively and objectively, it is possible that wrong conclusion have been drawn, which is a common risk in qualitative research. Further, the empirical backing of the findings is partly limited and should be validated through focused research. In sum, however, the validity of the findings should be fairly good since they are based on well-established theories and logical reasoning.

5.1.2   Question 1: Structures

Initially, the chain of actors participating in the delivery of online advertising was contrasted with the traditional supply chain paradigm and defined as the "online advertising channel". This allowed useful perspectives in terms of examining the mediating roles between buyers and sellers in the channel, as well as providing a strong theoretical background of supply chains and marketing channels – this theory was used to describe the delivery structures and value activities relevant to online advertising. Generating traffic is the ultimate purpose of the online advertising channel, derived from the advertiser's motives. Therefore, value creation in the online advertising channel, defined as produced benefits less their cost, targets to create advertising value – all channel objectives are subjected to this, and all benefits focus on either more efficient delivery or improved performance in the customer interface. Therefore, all efforts to increase performance among end customers add value in the chain.

Three main parties of online advertising were identified, namely advertisers, publishers, and mediators. Most commonly, advertisers operate as buyers and publishers as sellers, whereas mediators are intermediaries that may create the marketplace or otherwise join buyers and sellers together (e.g. search engines and ad networks). However, the common setting is not always valid due to the so-called role contingency that makes parties switch roles according to changing environmental pressure. In relation to roles, it was discovered that the delivery of online ads can be described as both a distribution process and an exchange process, former relating to ad delivery to the customer and latter to buying and selling of advertising space. Consequently, it was concluded that roles and liabilities associated with them depend to some extent on ad delivery perspective – thus, roles in the dynamic ambiance of online advertising were labeled contingent, or flexible. Additionally, although not directly involved in the relationship between online advertising channel partners, website visitors (traffic) are in contact with all interfaces of the chain. Because traffic is very valuable for accomplishing channel objectives, these consumer touch-points become critical for the channel's success – respectively, acquiring, coordinating and redirecting traffic can be seen as the main channel tasks.

The mediating structure is crucial in different variations of the online advertising channel. It comprises of portals, search engines and advertising networks, specialized in information aggregation and coordination of traffic (website visitors). Introducing additional middlemen may reduce the number of direct contacts between firms, leading to increased contactual efficiency and decreased relationship governance and transaction costs. This effect is credited to the mediators' specialization, expertise and experience and can be referred to as the "middleman effect". However, this also a risk that transaction costs may rise if e.g. the communication between principal and agent is

inefficient or if there are other problems relating to transactional efficiency – also, the effect of double marginalization may raise product costs and reduce competitiveness.

In the online advertising channel, the middleman effect refers to the importance of ad networks that mediate the relationship between advertisers and publishers. Relating to the fact that the market power of a typical publisher is small, publishers often leverage their access to advertisers by joining a network operating as a middleman between advertisers and publishers. Advertisers do the same to increase their reach.

5.1.3   Question 2: Processes and models

The conclusions relating to processes include the following. First, online advertisement is a special type of "product" that has the distributional benefits of digital products, e.g. low marginal cost of distribution, no direct spillage or need for physical transportation. Online advertisements can also be tailored according to users' different needs and interests (cf. high adjustment factor) by using sophisticated ad serving mechanisms such as contextual targeting and centralized ad inventory.

Second, the ad delivery process can have many variations depending on the underlying structure. In other words, structural differences between ad distribution models also echo in the processual models – for example, outsourcing non-critical processes to additional hierarchies may bring time savings for an individual publisher. Regardless of different channel structures, ads are commonly distributed from ad server databases, i.e. ad inventory. For example, Google uses the same inventory for content and search networks.

Online advertising space can be priced according to different criteria such as impressions, clicks and user-performed actions. Different models are typically used in association with different ad formats, so that cost per impressions (CPI) is typical for banner advertisements, whereas cost per click (CPC) is commonly used in text advertising. Cost per action (CPA) often refers to affiliate marketing.

Finally, methods for online ad space selling include direct, representative, auction, and network selling. Within keyword advertising, the most commonly used method is the keyword auction, in which advertisers bid for the right to have their ads placed alongside certain content. Regarding exchange processes, the role of keyword auctions as both a price-setting and governance mechanism for quality is important. They function so that high performance (quality) is rewarded by lower keyword prices and better ad positions, whereas low performance is punished by increased bid rates and lower ranking. Advertisers try to benefit from keyword auctions to optimize their bid portfolios e.g. through long-tailing which is a diversification strategy aiming to reduce bid costs and increase reach.

5.1.4 Question 3: Relationships

Regarding exchange relationships, although Ching and Ellis (1996) suggest that the Web offers a number of unique "exchange-enhancing features", such as interactivity and connectivity that alter traditional exchange processes between firms, it was found that the traditional theory on relational dynamics (e.g. agency theory) seems to be well applicable to online advertising, which suggests that parties are dealing with the same issues than in the offline world – for example, lack of trust may constrain the sharing of information. Therefore, "exchange-enhancing" features of the Internet are not entirely harnessed, at least not until means of coping with relational constraints are applied. For example, although the Internet offers facilities to decrease information asymmetry between parties, actors do not necessarily use them to disseminate information freely in a competitive environment – thus, more than technological, costs of information sharing relate to e.g. financial, psychological and strategic reasons. It seems that the sharing of information is a complex matter, relating also to the use of power in channels, and with feelings of equity in an exchange relationship.

It was found that advertisers, publishers and the network all face a different type of moral hazard. For the publisher it is click fraud (under CPC model), for the advertiser it is false reporting on action data (CPA) or optimizing advertisements for free impressions (CPC) or for free traffic (CPA). For the network moral hazard consists of not fighting efficiently against click fraud – however, as concluded, click fraud will not benefit the network in the long run but is a loss–loss situation for all channel members, except the culprit. Therefore strong focus should be set on mitigating the problem, increasing the level of trust and decreasing the advertiser's perceived risk. Additional problems identified include free exposure and free traffic which are special cases of advertiser's moral hazard, and free dissemination that increases the risk of publisher's opportunism (click fraud) and compromises the quality of delivered traffic even if the publisher has no opportunistic agenda.

Additionally, several potential adverse selection problems in the online advertising market were identified – first, in the CPA model, bad publishers (delivering low-quality traffic) will require advertisers to set commissions higher than would otherwise be necessary to adequately compensate high-quality publishers. Second, abundance of bad-quality advertisements risks the content market to degrade should high-quality publishers abandon the network. Third, particularly in Google's case, bad-quality publishers (click fraud) may cause high-quality advertisers to desert the content network while focusing their efforts on the search network. Because Google gains a larger share of revenue from the search network (this revenue is not shared with publishers), it faces a moral hazard of silently approving low quality in the content network. Publishers taking part in the content network may then be left with low-quality advertisers – thus,

bad-quality publishers will hurt high-quality ones if advertisers are driven out.

Different quality outcomes identified in the study are presented in the table below.

Table 15   Quality outcomes in online advertising channel

	High-quality advertisers	*Low-quality advertisers*
High-quality publishers	**Efficient market**	**Free exposure and free traffic**
Low-quality publishers	**Click fraud**	**Adverse selection**

Briefly, high-quality advertisers combined with high-quality publishers produce the most desirable outcome, named "efficient market". In this market, advertising prices are set lower than in a mixed market comprising of large variance of quality – this is because the performance risk (see Chapter 4.3.2.2) is dissolved due to fact that publishers are able to produce high CTRs while advertisers produce high CPAs. Additionally, advertisers are able to trust that publishers do not commit click fraud, and publishers feel confident that advertisers avoid inflicting free impressions or free traffic. As a result, there is no need for risk premiums on either side.

Low-quality advertisers combined with high-quality advertisers, then again, relate to the problems of free exposure (impressions) and free traffic (see Chapter 4.3.2.1.2), whereas low-quality publishers coupled with high-quality advertisers equals click fraud (Chapter 4.3.2.1.1). Finally, the worst case scenario is a process of adverse selection taking place when the market is overcrowded with low-quality advertisers and publishers that produce and disseminate bad advertising, resort to click fraud and other types of opportunism, damage user experience and, ultimately, drive out high-quality providers (Chapter 4.3.2.3).

Quality issues are emphasized by the effects of banner blindness and ad clutter that reduce advertising performance even for high quality ads. Google approaches the matter by implementing an algorithm called Quality Score which rewards well-performing ads with better placement positions at the cost of those performing below the average – essentially, a low Quality Score will raise the advertiser's cost while a good Quality Score will lower it. However, for advertisers this represents a certain dilemma because they are left unaware of their ad's position – in fact, because Google applies a different minimum bid price for different advertisers bidding on equal keywords, the auction's outcome can be in some cases interpreted as a form of discrimination, as certain advertisers bidding for a specific keyword are required to pay more than others for the same ad position with the same keyword. There is also some criticism pointed to the mechanism of quality assessing. Generally, a statistical analysis can be seen as an improper measurement for creative quality. Qualitative analysis would then be required

to determine the potential attractiveness of the ad, and even then the estimation would somewhat deviate from reality due to subjective preferences of ad liking. Of course, this effect will be removed after the ad has received a statistically meaningful amount of impressions – but, since the ad position will have to be determined before this, the challenge of assessing advertiser's quality remains.

It seems that Google has taken a great deal of matters into consideration when designing their ad system, paying attention to advertiser's and publisher's interests as well as their level of quality. Using methods such as placement report, position preference, smart pricing and negative keywords may reduce information asymmetry and improve actors' decision making capabilities because data is processed and readily accessible, thereby saving time and cognitive efforts (cf. bounded rationality). Generally, principals may resolve agency problems by increasing goal congruency, performance-based incentives, perceived trust and agent's commitment to the relationship. Additionally, it parties are willing to comply and make compromises, equilibrium of interests can always be found (see Chapter 4.3.3.2). For example, this may be based on improving user experience and ad quality while reducing intrusive factors and wasted impressions.

Finally, Google seems to follow such rationality that is based on long-term rewards instead of short-term utility maximization – this is visible in the firm's expressed commitment to fight click fraud, as well as providing relational support to advertisers. At the same time, however, the firm aims to minimize costly legal conflicts with advertisers subjected to click fraud. Obviously, there is a certain degree of self-interest also in the actions of the network, which reduces its objectivity and increases vulnerability to moral hazard such as inefficient fighting of click fraud and unequal revenue sharing with publishers. Therefore, although some problems derived from the agency setting can be reduced, others remain, such as moral hazard and the risk of adverse selection relating to low-quality providers overflowing the market. Methods such as monitoring abnormalities in click streams, eliminating deceptive agents and applying sophisticated fraud detection mechanisms reduce these problems, but because long-term orientation and high degree of self-interest are integrated into the behavioral model of some agents, opportunism cannot be entirely eliminated Therefore, it can be stated that not all problems can be solved by technological means, especially those rooted in the nature of exchange and deviations of rationality.

5.2   Future of online advertising

The future of online advertising is looking quite bright at the moment. Sempo (2007) predicts that the SEM industry, in particular, will experience significant growth until the

industry will start to mature by 2011. In the near term, major challenges include (1) improving search inventory management, (2) monetizing multi-word search phrases, (3) increasing transparency, and (4) reducing overall complexity; whereas main drivers for growth are strong advertiser demand, rising keyword prices and cost per click, and second wave of small-to-midsized firms in search advertising (Sempo 2007).

Other markets are expected to follow the United States, as "Internet advertising will make the greatest gains relative to total ad spending in Western Europe, where online ad spending will capture 18.2% of total ad spending in 2011" (IDC 2008). IDC also forecasts a 15–20% annual growth for worldwide spending on Internet advertising throughout the forecast period of 2008–2012, so that the Internet's share of total advertising spending in all media reaches 13.6% by 2011, amounting to $106.6 billion.

At the same time, the gap between Google and other search engines widens. According to Sempo (2007), 97% of search marketers were using Google AdWords to advertise in the Internet in 2007. Furthermore, the percentage of users for Yahoo! Sponsored Search dropped from 86% to 70% in the same period, while the respective decline for Microsoft was from 68% to 53% (Sempo 2007). At the current situation, there exists no countering force to Google in the market of online advertising. Google has managed to combine both the buy-side and sell-side by applying two different platforms for advertisers and publishers, thus creating a marketplace in which the firm has the ultimate control over both parties. Google's success results from producing value to both sides: for advertisers, it offers more reach than competitors (higher search activity, larger network); for publishers, it monetizes their traffic better than other networks (Schiffman 2008). Additionally, Google's dependency over publishers (content network) is reduced by the incorporation of search network, which is an incomparable source of traffic.

In the long run, however, Google's dominance may wear off. With low entry barriers and increasing CPC prices in the Google network (due to increasing competition among advertisers), it Google may become a prisoner of its own success if its popularity continues to raise keyword prices, causing advertisers to seek more cost efficient alternatives from other networks. Technically, Google has no means to apply price elasticity for keyword prices because they are set by competition between advertisers – even if it increases supply of ad space by increasing revenue sharing percentages, demand and supply do not grow asymmetrically because there are a limited number of keywords. In other words, even if there were billions of websites in Google's network, advertisers would still compete over the same keywords leading to rising prices.

In the future, it is likely that we also see countering measures from the media sector in the form of horizontal integration. This can occur through networking (without Google) or through acquisitions. Already, there have been many publishing media firms that have reached their presence online by purchasing smaller, independent websites.

This development is likely to continue in the foreseeable future. Most likely, it will also result in a change in the power balance between actors – as publishers become more integrated, their bargaining power increases. This will mean that advertisers need to put more effort in selecting and managing their online media portfolio. On the other hand, this implicates that the power of Google would decrease as a result of publisher integration. Also, industry maturation will be likely to result in higher quality ads, greater degree of professionalism, commercialization of websites, and increasing competition over well-converting traffic.

Finally, Timmers (1999) states that Internet develops as a technology-driven "virtuous innovation cycle" – not solely based on technology but new inventions, business models and ways of interaction that individual and firms discover every day. Text advertisements are a perfect example of this – originally hard to sell to investors, they now constitute the majority of online advertising revenue. The development should be understood in a wide sense, including *technological progress* at the infrastructural level such as the proliferation of broadband Internet connections, *service-level innovations* such as the development of new business and advertising models (e.g. keyword advertising and contextual targeting), and *the user level* which implicates that diffusion among customers will ultimately determine the course of development. This is why the user should be put centric, following the reverse value chain thinking (see e.g. Schary et al. 2001) – in online advertising this translates to improving the user experience while removing intrusive and distractive factors. Essentially, there is enormous potential in online advertising if employed creatively.

6   SUMMARY

This thesis was about exchange in online advertising. It examined the roles and linkages of key actors (structures), distribution of online advertising (processes) and exchange relationships between advertisers, publishers and intermediaries, the latter presented largely by the search engine firm Google. The study was done by reviewing relevant literature from the fields of economics, supply chain management, marketing and social sciences, by using various theories to describe different dimensions of exchange in the chain of actors delivering online advertisements (i.e. online advertising channel) and by analyzing relationships in this chain through the established concepts of agency theory.

In the first chapter, research motives were introduced along with some central concepts. It was established that, while a growing business sector, Internet advertising has not been widely researched using this particular focus. However, the research body of online advertising was recognized growing. Additionally, the concepts of exchange and channel were defined, with the conclusion that there are different levels of exchange (i.e. transactional and relational) that vary in depth – also, approaching online advertising as a channel structure was justified by the purpose of delivering ads to end users (i.e. website visitors). Additionally, study topicality was discussed, stating that the online advertising industry has grown for a number of years but is still immature compared to more established markets – therefore, there was found room for a this type of study, be it that the particular approach was found untouched by previous literature. Finally, a conceptual relation between online advertising, Internet marketing and e-commerce was established, with the conclusion that there is partial overlap between these concepts so that online advertising and Internet marketing are very close to one another, whereas e-commerce refers to other things outside the scope of the thesis.

In the second chapter, the concept of online advertising channel was defined by using the paradigm of supply chain. This included discussing the basics of supply chains and value networks and examining their conceptual relation to channels. Further, a common value system, or network, of online advertising was presented along with general value-adding activities. Additionally, key actors in the online advertising channel were identified and discussed briefly (including advertisers, publishers, traffic and intermediaries), after which their roles were examined, starting out with an analogy that contrasted online advertising channel to a typical supply chain, using this comparison to identify specific roles in the distribution of online advertisements. Advertisers were contrasted to manufacturers, advertising agencies to suppliers, advertising networks to distributors and individual websites to retailers. Proceeding from this analogy, a diamond model of roles in online advertising was presented, demonstrating how each actor has a role in directing visitors (traffic) to the advertiser's website through hyperlinks placed in ads. Visitors and advertising agencies were identified as ancillary

structures in the channel, having a significant but indirect role in channel operations. Equally, it was established that the online advertising channel can be perceived as both a supply process targeted for ad distribution from the advertiser to the end customer, and a network of actors offering services to one another. Relating to this, contingency of roles was discussed, presenting that actors in fact switch roles according to dynamically changing environment, or the different focuses of ad delivery (distribution versus exchange). Relating to exchange, contingency causes that roles between buyers and sellers are sometimes switched, so that it may be false to state that a single actor is acting only as a buyer whereas another one is the seller – rather, in the complex reality of online advertising network of actors, different roles can be adapted simultaneously.

Third, the role of intermediaries was discussed. It was maintained that through their specialization, expertise and experience, these parties may offer considerable benefits acting between factual exchange partners by increasing contactual efficiency, and reducing transaction and relationship governance costs – this effect, dubbed as the "middleman effect", is present also in the online advertising channel despite of the opposite belief initially presented in the academic literature. In particular, Google's role was highlighted by providing information on market shares and ad network structures.

After discussing roles, the focus was shifted to exchange models. To begin, advertisements were contrasted to goods that flow within the channel, and examined in the property of goods. Then, macro-level models of online ad distribution focusing on the publisher's perspective were introduced, after which ad serving was described at the micro-level (i.e. from ad inventory to media website). Following this, four methods of ad space selling were discussed, with a special focus on keyword auctions that act as a marketplace for buying and selling advertising space. Finally, common pricing models of ad exchange were compared, with the conclusion that cost per impressions (CPI), cost per click (CPC) and cost per action (CPA) are the dominant models at the moment.

The fourth chapter was dedicated to exchange relationships in online advertising. These were approached with the help of agency theory – first, basic conditions for the principal–agent setting were identified based on literature; second, problems arising from these condition, namely information, decision and rationality problems, were discussed; and, third, the agency theory was applied to the online advertising channel to examine the delegation of tasks between channel members. It was found evident that channel partners can in fact be seen as delegating tasks to one another at many different levels relating to their exchange relationships.

The relational analysis involved also some discussion over the nature of rationality in economic decision-making, behavior and, ultimately, as a factor influencing exchange between parties. It was discovered that rationality is a complex concept, but at no means does it involve only the economic utility function as proposed in the classical theory of rational choice. Rather, in many contexts decision making is based on a divergence of

economic and non-economic (e.g. psychologic) factors.

It was discovered that many concepts from the agency theory are well applicable to relationships in online advertising, including e.g. delegation of tasks by the principal to the agent, varying interest, and information asymmetry, with their derivatives of moral hazard and adverse selection (that are multilateral when reversing agency roles). Overall, agency theory was found well applicable to this type of analysis because it allows discovering multiple aspects by reversing roles – for example, if content providers face the moral hazard of click fraud, Google as a network faces the moral hazard of unfair revenue sharing and advertisers that of false reporting of action data. By applying agency concepts to each actor, it was possible to elicit interesting viewpoints on central relationships of online advertising. In particular, it was found that there are many potential sources of conflict, regarding for example parties' different interests, power positions and the non-transparency in sharing of information and revenue. However, there are also many positive sides that may counter the negative effects, such as emphasis on advertising quality, goal of fair revenue sharing, and common interest in the end user experience. Based on potential points of conflict between advertisers, content providers and networks, a suggestion for a general equilibrium of interests was presented, built on common interests, compromises and long-term benefit of the channel.

Finally, Chapter 4 presented the conclusions, relating i.a. to the nature of online advertising channel, importance of mediators, and different types of moral hazard, risks of adverse selection and quality outcomes, as well as problematic of resolving relational conflicts and opportunism. The future of the industry was also speculated, presenting forecasts predicting strong growth especially in Europe and for keyword advertising. Also, horizontal integration was predicted.

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APPENDIX 1   Google golden triangle (Enquiro 2005)
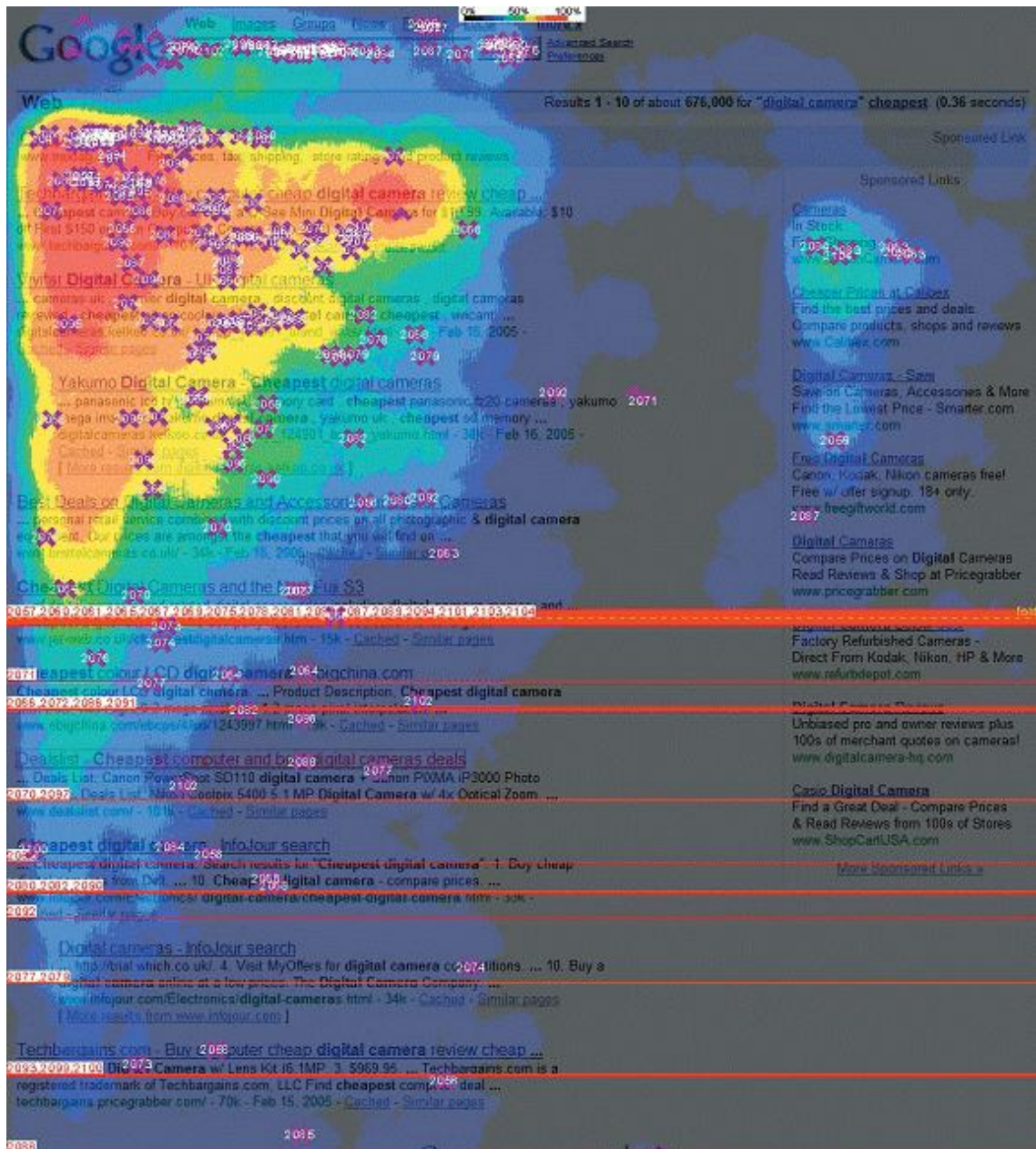
APPENDIX 2   Ad distribution between AdWords and AdSense (Aubuchon 2009)
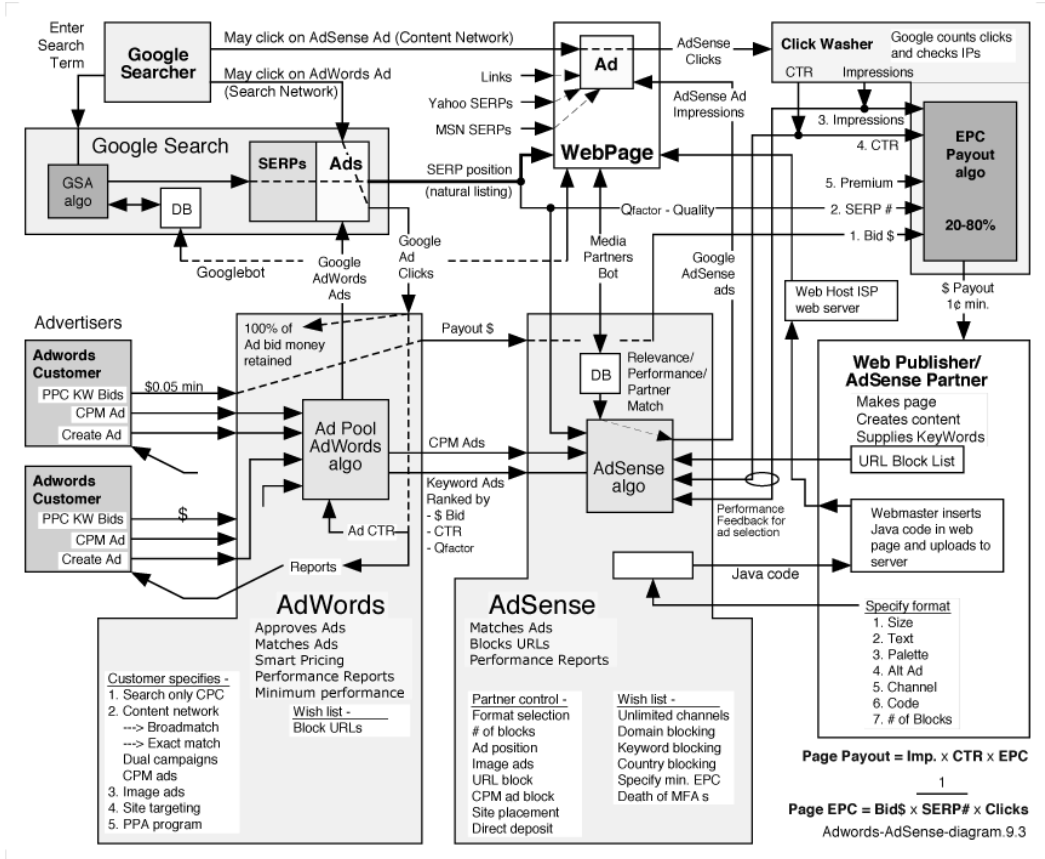
APPENDIX 3   Quality Score (Google 2009h)

Network	Keyword-targeted ads on search network (incl. Google.com)	Keyword-targeted ads on content network	Placement-targeted ads on content network
Calculation formula	Ad Rank = max. CPC bid × Quality Score	Ad Rank = max. content bid[80] × Quality Score	Ad Rank = max. bid × Quality Score
Factors	1. Historical CTR of keyword and ad	1. Ad's past performance on target site, and similar sites	1. Landing page quality
	2. Account history (CTRs of all ads and keywords)	2. Relevance of ad and keywords of ad group to content site	2. CTR on ad site and similar sites (in CPC model only)
	3. Historical CTR of display URLs[81] of ad group	3. Landing page quality	
	4. Relevance of keyword to ads in its ad group	4. Other relevance factors	
	5. Relevance of keyword and matched ad to search query		
	6. Account performance in geographical region where ad will be shown		
	7. Other relevance factors		

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[80] If content bid is not set by the advertiser, Google defines it based on the average bids of all keyword-associated CPC bids.
[81] Display URL is shown to the user and it may differ from the link URL – however, it should not be misguiding.