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INCENTIVES AND REVENUE SHARING IN NETWORKS

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EXECUTIVE SUMMARY

There are different levels and dimensions of collaboration and thus it is important to recognize the circumstances within the network in order to set the limitations and possibilities of certain types of collaboration. Collaborative network requires different kind of features so that partners would benefit the collaboration and the collaboration would be sustaining. The most notable features are trust, openness, mutual goals and risk and benefit sharing. Another important feature of collaboration is network coordination. Coordination can be referred to a strategic response to the problems that arise from collaboration. In this context, four coordination sectors were recognized: formal control, social control, information sharing and contracting.

As said, incentives and benefit sharing are important factors when companies are collaborating. If incentives are arranged properly, they will encourage partner firms to sell or deliver more and thus it will benefit the whole network. On the other hand, incentives are there also to prevent opportunistic behavior. The network suffers, if every company tries to strive for its own interests. Hence, accurate and fair incentive alignment could be a way to control opportunistic behavior. The design of an alignment needs to be attractive, motivating and sustain the partnership.

Revenue sharing is one benefit sharing mechanism that is capable of maximizing the channel's profit under certain conditions. Essentially revenue sharing means that a retailer pays to a supplier a wholesale price for each unit and in addition the retailer pays a percentage of the revenue the retailer generates. Though, revenue sharing has three recognized limitations. First, it is not suitable when retailer is competing with price. That is because price competition diminishes gains from revenue sharing. Secondly, administrative costs must be lower than the gains from revenue sharing. Thirdly, when retailer's actions influence the demand, revenue sharing is not attractable. That is because revenue-sharing contracts reduce the retailer's incentive to undertake effort relative to a wholesale price contract.

Revenue sharing is especially attractable when there are high peaks in demand and the current wholesale price is notably higher than the costs of producing an extra piece of service or product. Therefore rental business is one successful example of revenue sharing and that is why the most famous case of revenue sharing is the video rental company Blockbuster's case. Before the contract, Blockbuster bought video cassettes for about 65 dollars each, but with the new contract it paid 8 dollars wholesale price plus 45 % share of the revenues. Thus Blockbuster could buy more cassettes to meet the peak demand and the whole supply chain was benefitted through increased sales.

Different incentive mechanisms are extremely useful tools in business collaboration. That is why they are important in Smart Grid and Energy Markets program as well. Though, one has to be careful when applying incentives because of the risk of opportunistic behavior. Revenue sharing could play a role in SGEM, but it has limitations and thus the applied environment has to be suitable. In other words the principal cannot compete with price and the product or service the supplier and the principal are exchanging should have a high wholesale price compared to the costs. Otherwise the revenue sharing contract carries a notable risk component and thus the supplier can be reluctant to cooperate.

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1. INTRODUCTION

This review was written in Smart Grids and Energy Markets – research program. According to Wikipedia Smart Grids are

> *"electricity networks that can intelligently integrate the behavior and actions of all users connected to it - generators, consumers and those that do both – in order to efficiently deliver sustainable, economic and secure electricity supplies."*

This definition describes the complexity of smart grids quite evidently and that the smart grids require new technology and a new approach to management as well. Therefore the research program attempts to create an innovation foundation for new solutions, products and services.

The complex technology requires also a multi-actor network to operate. This kind of network has to operate in the most efficient way to gain some competition advantage – otherwise it would not be sensible to arrange a network. Hence, the most difficult task is to coordinate the chain so that all the actors would share a common interest and goals. That is because actors have different targets and goals and they may act opportunistically. There may also be some ignorance and other factors as well. All the same, as the chain works as a network that has a common strategy and means to operate, it can create and deliver value for customers in a most efficient way.

This review attempts to grasp that problem by examining network coordination and incentives. The purpose of this paper is to observe what scholars have been writing regarding networks in general and especially network incentives and network pricing mechanisms focusing on revenue sharing. The challenge is that major part of the literature is written of supply chains regarding products and demand uncertainty, whereas in this review the focus is on services. The terms 'network' and 'alliance' as used in this paper refer to entity established by two or more companies who cooperate in order to create competitive advantage. The usage of term 'supply chain' is restricted because supply chain refers to the flow of goods and that is not a proper definition in this context.

The inspection begins with an overview of alliances and networks. Then it continues with coordination mechanisms in the third chapter and incentives in the fourth chapter. The fifth chapter characterizes pricing mechanisms in alliances with a special focus of revenue sharing. Finally, the sixth chapter describes some cases including revenue sharing.

2. COLLABORATIVE ORGANIZATIONS

Collaboration can be defined as a co-operation or a relationship between two or more organizations. In this context collaboration is not considered as transactional, but a deeper relationship.

2.1. Integration typologies

A network can be organized in various ways. That means that the level of integration characterizes the nature of co-operation. The lowest level of integration is the markets. That means that there is no co-operation and all the transactions are based on competition. Contrary to the markets is that the actors are in a partnership and they share all the business related risks and gains together. Webster (1992) divided relationships into seven categories based on the integration level. See more from the figure 1 below.

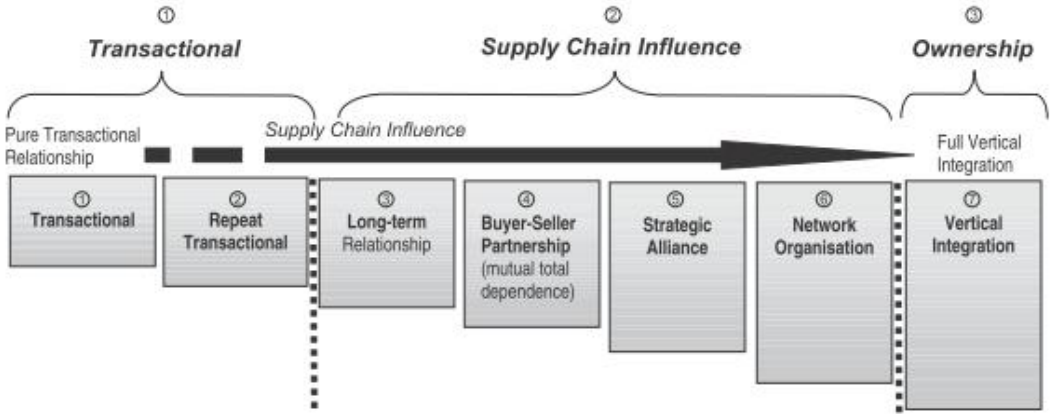

Figure 1: Integration typology. (Mason et al 2006 p. 142, originally Webster 1992)

As seen from the typology above, collaboration as non-transactional network has several levels also. In this context I am concentrating on buyer-seller partnerships, strategic alliances and network organizations. That is because the differences are usually small and the literature does not usually clarify which integration level it is dealing with. Basically this review is focused on dyadic co-operation and thus this excludes transactional and ownership modes of relationships.

Another typology is whether the alliance agreements include equity exchange or not. Differentiating the alliances based on equity, three major alliance structures can be found; joint-ventures, minority equity alliances and non-traditional contracts also known as non-equity alliances. (Das & Teng 1998.) In this review the cooperation is based on non-equity contracts.

Thompson (1967) has recognized three categories in organizational interdependence related to how the resources are shared. They are pooled, sequential and reciprocal interdependence. A pooled interdependence means that resources of the partner firms are

combined and therefore they use them to achieve a shared strategic goal. When resources are in sequential order, the activities of partner firms are distinct and serially arrayed. In a reciprocal interdependence firms resources are pooled, but in addition they are also simultaneously interdependent because the other firm's output is the other's input. (Thompson 1967 according to Gulati & Singh 1998)

For further reading on integration typologies please see: Rodawsk & Baraniecka 2007; Webster 1992; Gulati & Singh 1998.

2.2. Integration dimensions

Networks have also dimensions which depict the depth of collaboration. According to Lee (2000, p. 32), supply chains have three key dimensions, which characterize the nature of cooperation. Those dimensions are listed in the Table 1 below. The Table also describes the means how the integration occurs.

Table 1: Dimensions of supply chain integration (Lee 2000, p. 32)

Dimension	*Exchanges*	*How*
Information integration	Information, knowledge	Information sharing; collaborative planning forecasting, and replenishment
Coordination and resource sharing	Decisions, work	Decision delegation, work realignment, outsourcing
Organizational relationship linkage	Accountability, risks costs gain	Extended communication and performance measures, incentive realignment

Most of these dimensions and means are discussed later in this paper: coordination and information sharing are in the third chapter and incentive alignment in the fourth. Moreover organizational relationship linkages i. e. risk and profit sharing are discussed more in depth in the another paper (Kuparinen 2011).

In addition to discussed typologies, Adler (2001) has determined one more integration dimension typology. In his framework the integration has three dimensions. They are namely hierarchy, community & trust and market. They can be somewhere between low or high. From those dimensions the market is in this context described as high, because it relates to the network collaboration. Low market instead would desribe the organization formed by one company. Hierarchy is described as an mean to use authority to create and coordinate vertical and horizontal labour. In high hierarchy knowlegde is treated as scarce resource and therefore it is concentrated. Finally trust & community refers to social dimension of organizational collaboration. (Adler 2001, pp. 216–219.)

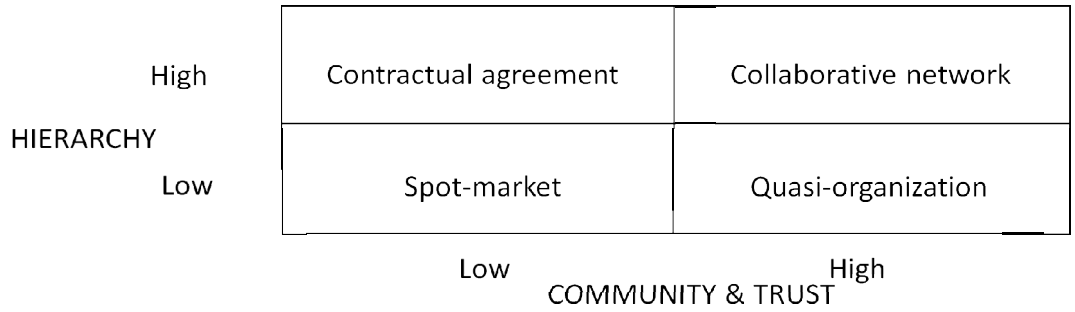

Figure 2: Collaboration dimensions (adapted from Vesalainen 2004 & Adler 2001)

From the Figure above one can see that some level of hierarchy is needed for cooperation. Otherwise the cooperation is not real and it is based on wrong assumptions. Also trust is needed for genuine collaboration.

2.3. Collaboration enablers

In order organizations to collaborate as a network there are elements that enable the collaboration. These elements actually just facilitate the cooperation, thus they are not mandatory. Iakovaki and Srai (2009) have listed five elements which enable network integration. From the table below you can see those enablers.

Table 2: Network integration enablers. (Iakovaki & Srai 2009)

Integration Enablers	Definitions
Common Goals	Build meaningful and cooperative relationships with clearly defined roles, integrative resources and joint ownership of decisions
Share Risks and Rewards	Set up appropriate risk management mechanisms that remain flexible and adaptable for collective responsibility of risk and benefit sharing
Network Synchronization	Executing activities and operations in an optimum sequence that maximizes responsiveness through effective material and information flows to enhance the way at which essential functions are performed
Collaborative Resources	Exploit organizational routines through the ability to make use of complementary resources that can contribute to create decision-support capabilities in the future
Knowledge Sharing	Willingness to exchange key technical, financial, operational and strategic information to appropriate stakeholders via effective use of information systems that contribute to quick, accurate and proactive decisions

The most important enabler considered this paper is shared rewards which I will later discuss more. Otherwise the enablers are fairly familiar in context of company collaboration.

A bit more specific list of enablers was created by Mentzer et al. (2000). They found 11 enablers as seen from the Table 3 below.

Table 3: Network collaboration enablers. (Mentzer et al. 2000, p. 53)

Enablers	Comments
Common interest	Both parties need to have a stake in the collaboration's outcome to ensure their ongoing commitment
Openness	Open discusses and information sharing. Even proprietary information should be shared
Recognizing who and what are important	Not all partners and activities are made equal. Choose those that deliver the greatest benefits
Mutual help	Two heads are better than one
Clear expectations	Understand what is expected of you and all the other parties
Leadership	Nothing significant will ever be accomplished without a leader
Working together and adjusting to one another	Figuring out collaboratively how to work in a supply chain
Cooperation, not punishment	Problems are solved jointly, not with punitive actions
Trust	Must be evident throughout the supply chain
Benefit sharing	Pains and gains are shared
Technology	Enables a collaborative relationship across the supply chain

Many of the enablers relate to people and personal interaction, not to technology and infrastructure. Therefore, social interaction is the most important factor considering collaboration. If the firms succeed in this social interaction, the collaboration has a foundation for success.

In the next chapter I will discuss more the network coordination. That includes basically all the enabling elements, but the next chapter especially emphasizes openness as information sharing and trust as building confidence. Both lists describe benefit or reward sharing as an important component of collaboration. That is why collaboration incentives are examined more closely in the fourth chapter.

3. NETWORK COORDINATION

Coordination can be referred to a strategic response to the problems that arise from collaboration (Xu & Beamon 2006, p. 4). That is why in this section I am describing some coordination mechanisms that have the most impact on network behavior. Through better coordination partnering firms are trying to prevent opportunistic behavior and to enhance network performance.

According to Das and Teng (1998, p. 500), non-equity alliances have naturally low confidence in partner cooperation. That is because in non-equity alliances the control and trust level are low since there is no binding equity shared. Thus, it is especially important to coordinate the cooperation in non-equity alliances.

Four different coordinating mechanisms was recognized considering network collaboration. They are formal control, social control, information sharing and contracts. Contracts include in formal controlling, but they are discussed separately because they are important when considering revenue sharing.

3.1. Formal control

According to McCann and Galbraith (1981) coordination strategies have three dimensions that are related to control. The first is formality: the relationship can be located somewhere between informal personal meetings and formal arrangements. The second is level of control: the control can be between high as of strict activity monitoring and low as of little or no monitoring at all. The third is decision localization. A network can basically operate and make decisions in two different ways; as centralized or decentralized. In a centralized decision style, one company has primary control and in a decentralized network, each company makes its decisions autonomously. Naturally all the firms can affect the decision making, but the ultimate responsible has to be named. (Xu & Beamon 2006, pp. 5–6) Hierarchical control is seen as a mechanism to control uncertainty. Non-equity alliances generally have few hierarchical controls build into them contrary to the equity alliances. (Gulati & Singh 1998, p. 781)

Das and Teng (1998) have discussed two specific control mechanisms in alliances. The first is goal setting which specifies what is expected of partners. The second mechanism is structural specifications which include rules and regulations. Partners often use them to ensure desirable behavior. They also found a third mechanism, but that refers more to social control which is discussed more in the next chapter.

3.2. Social control

Social control refers to building social bonds and culture in alliances and controlling them intentionally. This creates trust and confidence, which are the key coordinating mechanisms in alliances. In their paper Das and Teng (1998) reviewed the relationship of trust, control and confidence. They described trust as ‘expectations about positive

motives' as of confidence was described as 'certainty about cooperative behaviors'. Therefore, trust and confidence have different aspects and confidence develops through trust.

Das and Teng (1998) see cultural blending as an important social control mechanism. Managing alliance culture is a challenging task, because two different cultures are blending. Cultural clash is a major factor in unsuccessful mergers and acquisitions and that alone shows how important this kind of social control is.

Adler (2001, pp. 217–218) has created a table of how trust is generated and what is the target of trust. Trust generation has two dimensions: sources and mechanisms. Sources mean that where the trust comes from and mechanisms answer the question of how trust is generated. Trust targeting has two dimensions as well: objects (who or what is the target of trust) and bases of trust (features or objects in which one feels trust). The following Table 4 explains more.

Table 4: Dimensions and components of trust (Adler 2001, p. 218)

Dimensions	Components
Sources	• Familiarity through repeated interaction • Calculation based on interests • Norms that create predictability and trustworthiness
Mechanisms	• Direct interpersonal contact • Reputation • Institutional contact
Objects	• Individuals • Systems • Collectivities
Bases	• Consistency, contractual trust • Competence • Benevolence, loyalty, concern, goodwill, fiduciary trust • Honesty, integrity • Openness

In addition, Das and Teng (1998) have discussed trust in alliances. They found four key techniques for building trust: risk taking, equity preservation, communication, and interfirm adaptation. Equity preservation means that fairness is preserved in partnerships (see chapter 4). Therefore there are some mutual patterns in creating trust. First, the cooperation has to be a repeated interaction that has information exchange. Then there has to be some kind of adaptation in order firms to create a blending culture, which in fact creates predictable norms. More trust comes from equity preservation. Through that kind of behavior they can share some risks and have a reciprocal relationship that has trust and ultimately confidence in it. (Das & Teng 1998, pp. 503–507)

3.3. Information sharing

Asymmetric information creates conflicts in the network, because partners have thereby different aims, strategies and roles. Information sharing and especially sensitive infor-

mation sharing prevents conflicts and thereby coordinates the network (Simatupang & Shridharan 2001, p. 4)

Simatupang and Shridharan (2001, pp. 8–11) listed four benefits of information sharing in alliances;

- It helps to achieve contractual clarity
- Sharing customer data helps to respond quickly to the uncertainties
- It facilitates network coordination
- It reduces opportunistic behavior

The first benefit means that in contracting information sharing makes it possible to optimize resource allocation and to develop metrics that measure the performance in order to use suitable incentive schemes. Sharing customer data simply helps to understand end customer behavior and demand amplifications. Network coordination facilitating refers to order fulfillment improvement which aims at enhancing sales and reducing costs at the same time. The coordination is achieved via revealing inventory levels, orders status, sales, production schedules and other related data. The last benefit relates to the fact that information sharing builds trust and commitment which prevents harmful self-optimizing decisions. In addition, an incentive alignment is also required to prevent opportunistic behavior. (Simatupang & Shridharan 2001, pp. 8-11.)

Tomkins (2001) divides collaboration information into two classes. Type 1 information is needed to create and support trust between the collaborating companies. Type 2 information is needed to master events collaboratively. Table 5 explains what kind of information is needed.

Table 5. Information characteristics at different level of business relationships. (Tomkins 2001, p. 179)

Development stage	Information type 1 (create and support trust)	Information type 2 (mastering events collaboratively)
Exploratory/ screening	Possible partners' attributes from public sources: financial, technological and market positions, ethics and values.	Broad assessment of relationship option values. Costs and benefits of initial experimental ventures
Building commitment	More detailed information exchange on specific partner's attributes. Adaptability exhibited and requested	Scenario development Guarded revelation of costs and benefits of strategic options
Long term commitment established	Information that processes observed Reliable achievement of milestones, costs, quality, etc. Confidentiality demonstrated	Detailed assessment of joint competitive position Profit/ risk sharing schemes Agreed expectations of each other
Later life	Open book accounting for specific projects Transparency of actions	Extending relationship to new businesses Main focus on lack of crises, not process control

As seen from the Table 5, the information requirements and quality change as the relationship deepens. Thus, the deeper the relationship is, the more information is needed and revealed.

3.4. Contracts

A contract is usually a formal agreement which serves to establish rights and obligations of the partnering firms. A contract therefore strives to keep the partners from behaving opportunistically and thus it encourages cooperation. Threat of legal enforcement is the striving force in contracts. That's why it is an important tool in partnering. (Ryall & Sampson 2003, p. 1.) Also informal contracts may create the same kind of commitment and cooperation especially when there is a common desire to create and maintain a positive reputation for integrity and fairness (Frankel et al. 1996, p. 49)

Ryall and Sampson (2003, p. 7) state that more detailed contracts would be preferable, because such contracts set clear expectations for behavioral and thus they diminish the opportunistic behavior. Moreover, contracts should be written in plain English and they should be user-friendly and literate for business people as well. Also cultural differences should be taken into account. The more there is possibilities for confusions, the more disputes and conflicts arise. (Siedel & Haapio 2011, p. 115.) Campbell and Reuer (2001) offer a comprehensive overview of the basic legal issues in partnering contracts.

Siedel and Haapio (2011) have a somewhat different perspective of contracts. They argue that contracts should not be seen as legal documents, but instead contracts should be seen as creating and maintaining successful business relationships. Thus, contracts should integrate legal foresight into everyday business. They propose that contracting should be a conscious process and it should guide and support the business. Proactive contracting provides tools and methods to risk allocation and dispute prevention and resolution. The aim is to provide a reliable platform and a good roadmap to follow the relationship and at the same time to minimize the potential for problems and disputes. The following Table 6 compiles different functions of contracts.

Table 6. Functions of contracts. (Siedel & Haapio 2011, p. 118)

Contracts are tools for
- managing business, projects and commitments - creating, allocating and protecting value - communication, coordination, motivation and control - sharing, minimizing and managing risk - problem prevention, dispute avoidance and dispute resolution

4. NETWORK INCENTIVES

Incentives define how partners are rewarded or penalized for the decisions they make and thus incentives in networking or partnering are therefore used to improve network's performance. Traditionally they have been seen as an important way of collaborating in the short term and in the long term incentives usually build trust between partners. Thus incentives are commonly used part of contracts to strengthen the relationship and to share risks. In a network, incentives make actors' decisions coherent and they allow risk and benefit sharing. (Bresnen & Marshall 2000, p. 587-588.) Basically incentives have two purposes; first they aim to communicate information and secondly they motivate desired behavior. (Shoshanah et al. 2007, p. 18-19)

Moreover, managing to formulate incentives holistically throughout the network is a very challenging task. That is because each actor, even inside an organization, thinks opportunistically and thus they try to use suitable metrics that optimizes their performance. (Shoshanah et al. 2007, p. 18-19.)

4.1. Incentive alignment

Partnerships promise mutual benefits for the partners but those benefits are seldom realized because partners seek to maximize their own profit, not the whole network profit. According to Simatupang & Shridharan (2002), opportunistic behavior is due to managerial inertia. In their study, they identified four sources of managerial inertia; inappropriate measures of performance, outdated policies, asymmetric information and incentive misalignment. In this chapter incentive (mis)alignment is dealt in depth.

In order to create a win-win environment the incentives must be aligned properly. An effective incentive alignment is related to just three questions (Simatupang & Shridharan 2008, p. 409):

- What level of incentive is to be paid?
- How the incentive is to be linked to overall performance?
- How the incentive is to be paid?

That means that the most important question is the second because it defines how the incentives actually work. The design needs to be attractive, motivating and sustain the partnership. (Simatupang & Shridharan 2008, p. 409.)

Simatupang and Shridharan (2002, p. 26) argue that there are three types of incentive alignment. The first type is based on productive behavior. It means that rewards are paid on steps taken towards the mutually agreed objective rather than paid on the objective itself. That will create a continuous improvement culture that encourages and motivates the partnering firms.

The second type of incentive alignment is pay-for-performance. In that type of agreement the partners set performance metrics and they reward members based on the out-

comes. The metrics should be based on the most important activities. Therefore Activity Based Costing can be used to trace which member should receive rewards. The goal is to motivate desired performance and to control costs. (Simatupang & Shridharan 2002, p. 26)

Finally the third type is equitable compensation, which means that the partnering firms jointly agree on performance measures and a gain sharing formula. Open book accounting is a suitable tool to share the information needed for this kind of alignments. (Simatupang & Shridharan 2002, p. 26.) Equitable compensation mechanisms are reviewed more in Kuparinen 2011.

Narayanan and Raman (2004, p. 98) listed three means with which companies can manage and even prevent incentive problems. The first mean is to conduct incentive audits whenever new technologies or new markets are adopted. Audits should be done also when notable supply chain improvements are made. The second mean is education. Managers should know the supply chain processes and incentives so that they can manage the supply chain accordingly. Finally opportunism can be prevented and more creative ideas will come if executives examine problems at other companies or industries as well.

4.2. Limitations of incentives

Bresnen & Marshall (2000) reviewed critically the usage of incentives as a part of partnering and alliancing in construction business. They found three limitations which should be taken into account when making a partner-contract.

The first limitation was that in an organization individuals have differences in motivation. In other words an individual weights up of pros and cons and acts accordingly. This can affect incentives at organizational level, as they do not work as expected. (Bresnen & Marshall 2000, p. 589-590.)

The second limitation relates to organizational complexity. An organization is formed of complex social relationships and therefore there is unlikely to be a simple relationship between an external stimulus and an organizational response. (Bresnen & Marshall 2000, p. 590.)

The third and final limitation concerns intrinsic and extrinsic (financial) rewards. Reward systems should not rely solely on extrinsic rewards because they mainly emphasize the short-term commitment. (Bresnen & Marshall 2000, p. 590.)

5. MECHANISMS TO DETERMINE PRICE IN NETWORK CONTRACTS REGARDING SERVICES

Literature is basically concentrated on supply chain contracting which means that it is focused on goods that have demand uncertainty. In this review's context I am trying to describe mechanisms that are suitable for services rather than goods. Those services have also demand uncertainty, but because of one of the key characteristics of services, a service is intangible and it cannot be stored. That means that pricing mechanisms have to be determined accordingly. A buy-back contact is therefore not feasible. The other dilemma of service contracting is uniqueness of a service activity. A service is seldom a standardized process and therefore it varies every time a bit. So, in some cases it is difficult to determine a transfer price before a service event. But in this context a transaction is define as a standardized process.

5.1. Cost plus

In cost-plus pricing the dealmakers first calculate the cost of the product or service, and then include an additional amount to represent profit. It is a simple mechanism but it is not especially encouraging unless the whole network's profits are aligned.

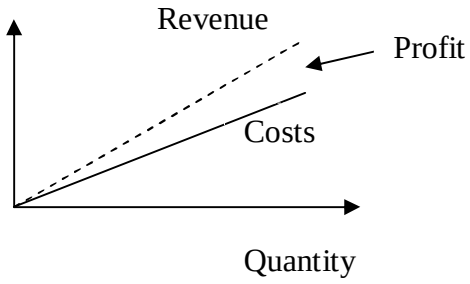

Figure 3: Cost-plus mechanism.

5.2. Quantity discounts

If the supplier delivers X-amount of products or services, then a discount Y is given for the rest. There may be one or more discount steps. As retail price remains the same, a retailer gets a better profit for selling more. A supplier loses same revenue, but this arrangement may benefit the whole network as the retailer will get an incentive when selling more than usual. (Dada & Srikanth 1987)

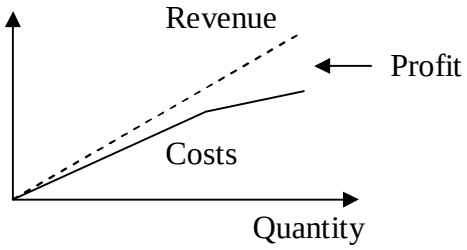

Figure 4: Quantity discount.

5.3. Quantity flexibility

In quantity flexibility contract a customer is committed to purchase no less than a certain percentage below the forecast and the supplier is guaranteed to deliver up to a certain percentage above the forecast. This method can allocate the costs of market demand uncertainty and motivate the customer and supplier to optimize the system. (Tsay 1999) This may be difficult to apply into services.

5.4. Two-part tariff

Two-part tariff consists of a one-time access fee for the right to buy a product or service, and a per-unit price for each unit consumed. It is used in amusement parks and golf clubs. (Hayes 1987). This kind of pricing model requires that the supplier is willing to take some risk but this model encourages the supplier to deliver more. Hence, it is suitable when the supplier has some capacity constrains and the principle is requiring some risk sharing.

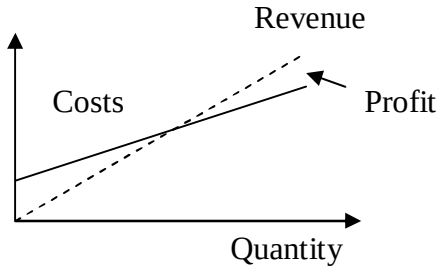

Figure 5: Two-part tariff.

5.5. Incentive mechanisms

Incentive mechanisms consist of diverse techniques to stimulate the organizational performance. In Lee and Whang's research the techniques included transfer pricing, consignment, shortage reimbursement and an additional backlog penalty. (Lee & Whang 1999.) These are not the only mechanisms and therefore some other incentive techniques may be added as well. Thus, the main goal of this model is to encourage the supplier with different techniques.

5.6. Revenue sharing

Revenue sharing means that a retailer pays to a supplier a wholesale price for each unit and in addition the retailer pays a percentage of the revenue the retailer generates. The percentage is mutually agreed in the contract. If this revenue sharing is in equilibrium, it can maximize the channel's profit. Economically revenue sharing means that a supplier sells at a wholesale price that is below its marginal cost, but the part of retailer's revenue will offset the loss on sales (Cachon & Lariviere 2005, p. 42).

Requirements for revenue sharing

Cachon and Lariviere (2001, p. 20–21) recognized two requirements for revenue sharing. The first requirement is that *'the cost to produce additional units must be less than the incremental revenue they generate'*. Then a greater availability of products will enhance supply chain profits. The second requirement is that the administrative costs of revenue sharing must be lower than the gains from the program.

When adapting these requirements to services the both requirements still stand. Bear in mind that because services are intangible, they cannot be produced before the usage. Hence, producing an additional service costs about the same and therefore the additional revenue increases the profits. The second requirement does not differ from the case of flow of goods.

Revenue sharing is especially important when there are high peaks in demand and the wholesale price is high compared to the costs. Therefore it is above all used in the video rental business where producing a movie is costly, but producing a copy of the movie is cheap. (Cachon & Lariviere 2001, p. 20–21.)

Revenue sharing limitations

Cachon and Lariviere (2005 pp. 30–31) have discussed some limitations of revenue sharing. They recognized three limitations. First, revenue sharing does not coordinate competing retailers when they compete with price and quantity. It coordinates only the competition with quantity. In case of price and quantity the quantity increases the revenue and profits, but the price competition diminishes the gains and the revenue shrinks.

The second limitation that they recognized is the administrative burden of revenue sharing. Administration may be costly because of the constant monitoring of revenues and the gains may not cover the costs. Of course if there is enough confidence between the partners and the information exchange is flawless, the administrative burden may not play a big part of the costs. (Cachon & Lariviere 2005, p. 31)

Finally, the third limitation is that retailer's effort is mainly non-contractable. That means that the supplier and the retailer cannot make a deal which would specify the retailer's advertisement, and other sales promotion effort. Thus this may create a moral hazard problem (the risk of opportunistic behavior) to the retailer because revenue-sharing contracts reduce the retailer's incentive to undertake effort relative to a wholesale price contract. Cachon and Lariviere even argue that revenue sharing contracts should be avoided, when demand is highly influenced by retailer's effort. This is the case for example in home appliance and automobile retailing. (Cachon & Lariviere 2005, p. 43)

6. REVENUE SHARING CASES

The most referred case example of revenue sharing is the case of Blockbuster from the late 1990s. Blockbuster is a video rental company, which rents new videotapes to consumers. The original pricing mechanism between the studios and Blockbuster was like that that Blockbuster paid for example 65 $ per tape and kept all the revenue it created. This kind of pricing mechanism caused stock-out problems for the most popular movies. That was because Blockbuster didn't want to buy extra tapes for the peak. That's why both the supplier and the retailer lost sales. After recognizing the problem they come to an agreement in which Blockbuster would purchase tapes for about 8 $ and the movie studios would receive 45 % of the revenue the movie created. (Dana & Spier 2001.)

One of the recent cases is the cooperation between airports and airlines. The airports income is generated from two sources; the traditional aeronautical operations and commercial operations. Lately the commercial business has grown a lot faster than aeronautical and besides that the commercial business is more profitable. That has made airports and airliners to share revenues in order to share the benefits of passenger flow. In a few cases an airliner and an airport share or control airport facilities and thus they have a joint venture terminal or other facility. Revenue sharing can encourage airliners to expand output and bring more customers to the cooperative airport. (Zhang et al. 2010)

Airline alliances need also revenue sharing for codeshare flights. But in case of flight alliances they don't share revenues like described earlier in this review. Instead they have to decide how the customer payment is divided when one airline is the marketing airliner and another is the actual operator. Another case is connection flights, when customers pay a single payment and that is divided between the operators. (Hu et al. 2010)

Revenue sharing contracts can be found also among internet services. For example Google AdSense shares its revenue to the users. The logic is that the service providers make the deals with advertisers and they invoice them according to the clicks or other agreed metrics. The webpage administrators are paid accordingly a certain percentage of the revenue. Thus the pay is related to the revenue the so called partnership makes.

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