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For all my fellow brothers and sisters in the LORD, I wish to leave this message:

*“ He who goes out weeping,
Carrying seed to sow,
Will return with songs of joy,
carrying sheaves with him.”, Ps. 126, v6*

God bless.

Abstract

The European Union has adopted transparent competitive tendering as compulsory governance mechanism for all public procurement within the Union in order to enlighten the principle declaration of non discrimination in the Union. The choice of competition was also explained by the desire to discourage corruption as it has been defended in the literature (Di Tella et al., 1997). However competition can raise transaction costs (such as quality opportunism) if quality is difficult to measure or monitor (Heide, 1994; Buvik et al., 2001). That is for example the case when public authority buys experience goods/services such as health service, defense contracts, or transport services. For those public goods, it has been noticed the difficulty for authority to verify ex-post accurately that the contractor has fulfilled the contracted quality.

Relational buying mechanisms may be effective to cope with such opportunism (Buvik et al., 2000; Laing et al., 2004). As such mechanisms are forbidden in public buying by the regulation, some authors such as Laffont & Tirole (1993) claimed that the design of appropriate enforcement mechanisms embedded in public contract tendering can help overcome the quality opportunism suspected to such goods/services. They have further elaborated a rosary of incentives to deal with the particular quality opportunism of experience good.

Which effective quality incentives exist for experience goods or services, and how are these implemented in practice to boost quality commitment? That is the question which guides this paper.

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List of abbreviation

BOT: build operate and transfer

CPI: consume price index

DOFFIN: Norwegian public procurement portal

EEC: European Economic Community

EDI: electronic data interface

EU: european Union

HMN: Helse Midt-norge

HSE: health security and environment policy

IT: incentives theory

NPE: norske patient erstatning

NOK: Norwegian kroner

PAT: principal agent theory

TED-database: European public procurement journal tender electronic daily database

TD: transportation department in Møre og Romsdal

VAT: value added taxes

1. Introduction

This chapter headed as introduction encompasses the study background, research problem, and the purpose and significance of the study.

1.1 Background of the study

The European Economic Community (EEC) members have taken further steps in the declaration of their community and non-discrimination of nationality principles. It has been pointed out that public procurement practices in country members aiming at preferring local goods and services in their buying decisions were contradictory to those principles. It was then important for the community to cope with those practices by engaging fundamental reforms in their national procurement policies. From now on, European governments and their related organizations are forced to carry out *fair* competitive tendering each time purchased good values reach a defined threshold.

The EEC claimed that a fair competitive tendering will be profitable for country members through the benefits of aggressive competition. With fair competition which can be interpreted as a transparent, non-discriminated and open competition (in some cases), public contracts will be awarded to the most effective suppliers. As well, market is currently challenged by permanent innovative opportunities which lead supply toward better quality at less cost. Therefore the extension of market size at the European level would produce better results.

And now the obligation to tender in public procurement when the threshold is reached, is widely implemented within the EEC. In Norway, the regulation *2006-04-07 nr 402* has made compulsory all public buying reaching the threshold defined by the EEC. That regulation concerns all public buying at the central government level or at the local level (Fylket, Kommune, Autonomous public institutions). However, competitive tendering for the purchasing of certain goods is being challenged by substantial transaction costs, especially for experience goods. The selected supplier may not have the right competence to fulfil the contract specifications, or may behave opportunistically ex-post

by supplying a quality below the contracted quality level since his quality performances are generally difficult to monitor for such goods. That is why many authors are claiming that competitive tendering may not be the adequate governance structure for experience goods. Other voices under protest argue however that competition may show strong positive results (on cost and quality) if enforcement mechanisms are provided to supplier.

1.2 Research problem

Enforcement mechanisms embedded in public contract tendering can help overcome the quality opportunism suspected to suppliers of experience good. That is a statement that authors such as Laffont and Tirole (1993) claimed under protest. They have further elaborated a rosary of incentives to deal with the particular quality opportunism of experience good.

Which effective quality incentives exist for experience goods or services, and how are these implemented in practice to boost quality commitment? That is the question which guides this paper.

1.3 Statement of purpose and significance

This paper explores the effective quality incentives mitigating the quality opportunism on experience goods and services in public contract which are suggested by theory pioneers such as Laffont and Tirole (1993). We will try to investigate as well how these incentives are implemented in day-to-day public procurement practice in Norway.

Public procurement in Norway reached NOK 260 billions in 2004 (Ødegård, 2006). That was about 15% of the country's Gross Domestic Product (GDP). For such high weight in the country's GDP, there is no doubt that the effectiveness of public expenses in Norway would have a great influence on wealth creation. Effectiveness here is reached when suppliers for public services and goods provides the right quality at the right costs. Also because a big part of these public expenses are devoted to acquire

experience goods and services (transport, health service, defence), the quality opportunism suspected on such goods and services put a great potential risk on wealth creation in Norway by threatening the effectiveness of these expenses. The design of appropriate incentives coping with that opportunism will lead to public expenses effectiveness, and thus will boost wealth creation in Norway. This is where the practical interest of this study is revealed.

When reviewing the literature on public procurement, it appears that a wide number of researches have been done to suggest positive (which should provide desirable results) enforcement mechanisms to reach quality expectation (Laffont & Tirole, 1993; Kjerstad, 2000). However, it is few researches done to investigate how well are those understood at the implementation stage by public procurement practitioners, especially in the Norwegian public procurement. The uniqueness of this paper is to fill up such theoretical gap.

With focus on public contract specifications, we will explore the incentives suggested by Laffont & Tirole (1993) and other Incentives Theory (IT) pioneers to deal with quality opportunism in public contracts in Norway. We will investigate their implementation in public buying practices in Norway.

The remaining of the study will define quality as it is apprehended in this paper, then follows the theoretical part of this paper reviewing the effective quality incentives suggested by authors such as Laffont & Tirole. Empirical evidences will be shown thereafter to explore the potential of quality opportunism on the specified quality and the practical implementations of incentives to mitigate these quality risks. We will end up by discussing the effectiveness of the implemented incentives.

2. Quality definition of experience good

Experience goods are considered as goods whose quality is observed by procurer only after purchase, and/or difficult to verify ex-post contract (Laffont & Tirole, 1993). Experience goods can also be defined as goods whose quality is observed by users but not easily verified by procurer who write the contract. In both cases, experience goods contracts are subjected to high quality uncertainty.

In the public sector, experience goods concern the utilities, the defense services, health service and transport services. Those services are generally supplied through franchise contracts. The procurement of these services occurs first and the quality is observed ex-post purchasing by users as they experience the supply quality (during the usage). An example can be when users of electrical power supply observe the quality during the usage.

Indeed, the quality of experience goods or services is about how users is satisfied. Users satisfaction depends on how the supply meets or exceeds his expectation. It requires from the supplier to know exactly the actual needs of customer. However, customers' needs evolve as time is running. Explicitly, the needs of customers yesterday are not *de-facto* the same today. The latter suggests that users' perception of quality depends on how well the supplier anticipates the future needs of his customers. As Evans (2005) stated:

Quality is a race without a finish line. (p. 11).

From the above statement, it appears clear that quality should be envisaged in a continuous improvements perspective. The following improvements can specially be fostered to supply better quality for experience goods:

- *Customer service and quality improvement*: Customer services refers to all the activities designed to enhance customer satisfaction. in other words, it includes all

activities helping to know the customer and his actual and future quality needs, as well as activities useful for responding to customer expectation.

- *Organization management improvement*: It is important that supplier aligns all his internal capabilities and abilities so as to meet customers needs at any point of time. By internal capability and ability, it is meant the human asset (or the social capital) and the technical asset (physical investments).

As it can be seen above, quality in public buying of experience goods or services is not easy for public procurer to control because it involves more than the service specified to be delivered (even internal management is concerned for better quality). That lack of control over quality increases the risk that the supplier does not supply the contracted quality. Quality commitments devices should then be designed for supplier of experience goods.

3. Theory and literature review

3.1 Agency theory

Principal-Agent theory (PAT) or agency theory (AT) explores the relationship between a principal or a buyer who contracts with an agent or a seller for the supply of a goods or a service (Buvik & Rokkan, 2003). In such contract, it can be possible that the principal and the agent have divergent interests (conflicting interest)¹. Such divergence of interests can lead to moral hazard and adverse selection.

The *moral hazard* refers to contractor's discretionary actions not observed by the buyer and which can however influence the contract costs and quality. Example of moral hazard is the supply of a quality level lower than the contracted level (when the action cannot be observed by buyer) in the desire to save costs. *Adverse selection* as for it is about the exclusive or private information possessed by the contractor and which is not

¹ The principal can target quality while the agent wants to save costs (less effort)

available (or not observable) to buyer. The agent can hide such private information in order to derive substantial information rents from it. Classical example of adverse selection is a smoking person who hides the information that he smokes (his private information) in order to pay an insurance price lower than the one reflecting the premium risk paid by all smokers before they get insured.

Agency theory proposes that the principal invests in monitoring tools to gather information on agent actions, and/or initiates [the principal] a contract which aligns both interests (principal and agent) so as to reach the desired goal (quality expectation in this case). Two types of contract are then available for such purpose: *behaviour-based contract* and *outcome-based contract* (Buvik et al., 2003).

The behavioural-based contracts emphasize on the level of risk beared by the agent as a tool to solve the moral hazard issue. According to such contract, the agent tend to have a high powered incentive to supply a better quality (high effort) if the principal can design a contract so that he (the agent) bears a high financial risk. An example is a public Build Operate Transfert (BOT) contract without any subsidy. In such contract, the agent (private operator) can only cover his operation costs from his sales revenue. Consequently, that agent will have a high incentive to provide good quality especially if quality and demand are complementary. The issue to put all the financial risk on the agent is that the agent can charge a high risk premium (high price) for the high risk if he is risk averse (Douma & Schreuder, 2002). The theory supposes that the agent is risk averse while the principal is risk neutral. The idea is that the principal is supposed to be bigger in size, and therefore can diversify his risk to different portfolio of investments (Douma & Schreuder, 2005). As an alternative to the cost of risk bore by the agent, it is argued that the principal can give a quality incentive to the agent. The problem for the principal becomes then a design of reward structure which trades off between having the agent bears more risk and giving him incentives (Douma & Schreuder, 2002). The best solution is to have the principal sharing in the risk bore by the agent by designing a reward structure depending on the payoff (outcome quality) but also containing fixed element independent of such outcome.

Outcome-based contract as for it seeks to explain that the principal can discourage the quality opportunism by specifying in the much details possible the expected quality

while providing key performance indicators for effective monitoring (Stanley & Hensher, 2008). If outcome-based contract can be of help, it can however show its weakness if quality complexity or uncertainty is very high. In fact, service such as health or defence services are difficult to predict because of their high uncertainty (Laing, 2004; Parker, 2003). That is why outcome-based contract should consider flexibility so as to facilitate adjustments or modifications involved by the uncertainty.

In definitive, public buyer may align the three mechanisms, namely information gathering, outcome-based contract and behavioural-based contract for better results. Such designs associated with appropriate incentives designs can be effective to eliminate quality opportunism.

3.2 Incentives Theory (IT)

Derived from principal-agent theory (PAT) and game theory, incentives theory is concerned about the sensitivity of the power of optimal incentive schemes to changes in factors such as uncertainty, product market competition, quality concerns, bidding competition, dynamics and collusion (Laffont & Tirole, 1993) (p. xviii).

In the previous section it has been explained that moral hazard and adverse selection can negatively affect the targeted quality. We also pointed out that gathering information on supplier's actions may help overcome these risks. Information gathering incurs however additional costs. Incentives theory seeks to create effective (powerful) alternative mechanisms to replace the needs to gather information, thus avoiding the incurred costs while meeting quality expectations. In other words IT tries to design alternative mechanisms able to mitigate monitoring costs (for example self-enforcements devices) while committing supplier to his quality obligations.

Incentives theory is of interest in public procurement. In fact, experience good contracts in the public sector are usually awarded through competitive tenderings for certain duration, all of which secure high market power to contractor (franchise bidding). The high market power can encourage public contractor to behave as a monopolist. It has

been pointed out that monopolists supply usually poor quality when they are not regulated (Essig & Batran, 2005). The design of quality incentives can be used as regulatory tools.

3.3 Quality incentives and experience goods

Moral hazard and adverse selection have disastrous effect on quality in public procurement. As it has been developed above, most of public contracts concern experience goods and the potential of adverse selection for such goods is high at the contract awarding stage. Because supply occurs after purchased, the selected supplier may lack the required competences to supply the targeted quality. However competence is a private information for supplier (he knows better his own technology and capability than does buyer). As well, the issue of moral hazard is linked to the fact that the supply of quality increases usually the supplier's costs. Laffont and Tirole (1993) stated accordingly:

In the case of experience goods, we argue that incentives to supply quality and those to reduce costs are inherent in conflicts.(p. 213)

According to this statement, quality supply involves additional costs such as investments costs. Nevertheless, private supplier in public contract has the prime interest to maximize his profits. The supplier can therefore behave opportunistically by taking discretionary actions to deteriorate the contracted quality level (cheaper materials to derive rents) since such actions are difficult to detect in experience good contract. The idea is that quality is the ideal candidate for such opportunism than is cost. The latter is observable and easily verifiable through open-book agreements (Bajari, 2001). Incentives must then be provided so as to commit the contractor to his quality obligation (conformance to contract). Such incentives named as *quality incentives* must be carefully designed because they can generate some distortions which result in term in substantial costs (Kjerstad et al., 2000; Bajari et al., 2001).

The literature in incentives theory has suggested various *optimal* quality devices. Those optimal or effective quality devices are considered to achieve both quality target and *fair* costs.

Based on the works of Laffont & Tirole (1993), Kjerstad et al. (2000), Vickerman (2004), Osmundsen et al. (2008), and Bajari (2001) the following table summarizes the literature on effective quality incentives schemes

Quality incentives	Adverse selection	Screening incentives/ Monitoring and sanction incentives
	Moral Hazard	Competition and comparison incentives
		Contract price
		Contract duration
		Sub-contract coordination mechanism
		Sales incentives
		Reputation incentives

Table 1: Summary of main quality incentives

3.4 Implementation of Optimal Quality incentives for experience goods

3.4.1 Screening incentives

Screening incentives are those that public procuror provides at the selection level to ensure future quality supply. They are designated to gather critical information on supplier's capabilities, and on market (to formulate accurately the quality specifications).

Public authorities may reduce the asymmetric information problem by gathering market information (available technology, development). A tool to achieve that is competitive

dialogue² (Essig & Batran, 2005). Competitive dialogue is meant to investigate more closely the competences available at potential suppliers' side. During the competitive dialogue public procurer has the opportunity to have an insight on alternative supplies available, and thus can benchmarked those alternatives to address more accurately his quality expectations. Competitive dialogue is beneficial when the quality is very important in the contract but is difficult to formulate because of its high complexity.

When competitive dialogue is not used, public procurer may require ex-ante contract from bidders to declare their plan/strategy or policy which enlightens how they will fulfill the specified quality. By doing so information on supply candidate's competences can be extracted.

Fee or guarantee payments are other effective devices to extract private information from seller at the selection level. Kjerstad & Vagstad (2000) explained that fee payment is optimal where the risk of information rent is high because it involves self-selection devices (discourage unserious bidders). However it may keep away efficient bidders from bidding if the fee is not chosen carefully in a way to leave enough rent for those bidders. Optimality of fee incentive will come from their careful choice.

Self selection devices, other aspects of screening incentives can be given to unserious bidders through a detailed specification of quality. In fact, unserious bidders or hit-and-run bidders may avoid entry if they know that quality opportunism will be easy to detect through effective monitoring devices. That is that the buyer can give a strong signal to unserious bidders that he knows exactly the quality to be delivered. For example through learning by doing, the buyer can develop effective key performance indicators (KPI) to be described in the bid in order to measure future quality performances of operator. Those KPI serving as monitoring devices may discourage hit-and-run companies as the quality performances of the latter would be accurately assessed through the benchmark against those KPI (Hensher et al., 2008). The accuracy of such quality measurement can be increased by using advanced technological tools. With the technological development present in today's business, it is possible to acquire monitoring tools which can provide real-time data (GSM, GPS, RFID) on how the

² Competitive dialogue is a competition coupled with negotiation

contract is executed. When such tools are possible to acquire, monitoring becomes effective (accuracy in KPI measurement) and the design of sanction schemes or coercive incentives to punish any contracted-quality break can provide quality incentives to supplier. Coercive incentives can be for example financial (monetary compensations for poor quality), or can be a pure cancellation of the contract. In such case, the potential of adverse selection and further moral hazard will be reduced significantly.

3.4.2 Competition as quality incentive

The design of outcome-based contract to control the negative effect of information asymmetry on quality could be successful if comparative outcome-performances exist. Comparative performances suppose that it exists alternative supply sources whose performances can be benchmarked against the contractor's outcome. To say it differently, competition (presence of alternative supply source) can be an effective motivation for public contractor to provide quality. As Laffont & Tirole (1993) (p.211) claimed:

*Second, the possibility of non-renewal of a regulatory license [public contract], of **second sourcing** [alternative supply source], of **deregulation** [competition], or of missing future sales-contingent rewards makes the regulated firm concerned about its reputation as a supplier of quality.*

Increased competition (high number of alternatives supply sources) may help overcome the negative impact of moral hazard and adverse selection on quality supply. However, the quality effectiveness of competition is not secured right away. Competition can lead to corruption, market concentration and collusion, which in turn limit the positive benefits of competition on quality (De Silva et al., 2009; Amaral et al., 2008; Solvoll et al., 2008; Alessanderson et al., 2006). It is then the responsibility of public procurer to take appropriate actions so as to increase the effectiveness of competition as quality incentive.

For example market entry influences strongly the market structure (concentration or few competitors). Solvoll and Mathisen (2008) have enlightened how the tendency of market concentration in the bus industry in Norway hinders increased competition, and thus limits its quality advantages. The procurer can fight against concentration or oligopoly by removing the barriers which limit entry. Information advantage of incumbent vis-à-vis other competitors (De Silva et al., 2009) is among such barriers. Incumbent has usually more information about costs, technology, competences (through learning by doing) than entrant competitors since the first has been supplying the good in previous contract.

Such information disadvantage of entrants can in term keep them out of business and thus deteriorate quality through market contraction and collusion. Explicitly, information disadvantage of entrant can lead to the winner's curse³ which can generate bankruptcy at the end. The winner's curse can occur to incumbent as well if there is high uncertainty in the bid, all of which can increase the risk of quality opportunism derived from the lack of information for both incumbent and entrants. De Silva et al. (2009) advise that the release of information critical for bidders (engineering costs, technical information) in the bidding process can help mitigate the winner's curse and in term keep competitors on track (in business) for better competition.

Transparency in the award procedure is also a strategy to foster competition by eliminating corruption for example. It is clear that corruption is a parasite of quality. Di Tella (1997) understood it earlier when he said:

Corruption converts perfect competition to monopoly.

Earlier in this paper we demonstrate that monopolist usually has a lower quality level than when competition is increased. Transparency is then important for competition, and thus for quality. The procurer may achieve transparency by making public all critical bid information and avoiding informational discrimination (have private contact with some bidders) and corruption. It may be advantageous to keep however some opacity. For example hiding bidders' identity can help overcome tacit collusion. Industry members

³ Winner's curse is when inexperienced bidders bid aggressively at a price lower than real cost to win the contract. In turn the operator will lack financial resources and go bankrupt, so stop supplying. (see Amaral et al., 2008).

can use such information to punish treachery (competitor who break tacit agreements) (Amaral et al., 2008). Opacity must however be controlled so as to not ends up in corruption.

The final action in this section to strengthen competition is dual sourcing (Laffont & Tirole, 1993). It consists to split the contract scope into several markets segments in order to preserve future competition by keeping many alternatives supply sources in activity. Clearly, instead of attributing a whole market to one supplier, authority can restructure the market into different packages and allocate those to different suppliers. Such techniques will enforce quality⁴ while preserving future competition by keeping many suppliers in business.

Dual sourcing fits for experience good because it is more effective where asymmetric information is substantial (Laffont & Tirole, 1993). Through dual sourcing public authority can use his discretionary power to operate a public entity in some markets. That can help the public procurer to have an insight on operations, and thus be able to release critical information to bidders such as operation costs (Amaral et al., 2008).

3.4.3 Contract price

The price in supply contract can have a great influence on the quality. There is usually two types of prices that are discussed in the incentive theory. Those are *fixed price* contract and *cost plus* contract. The first is considered to give high motivation to the supplier in order to increase his costs reduction effort, but at the expenses of quality (Bajari et al., 2001). In the opposite cost plus contract gives high quality incentives, however the supplier can overinvest in quality which would lead to cost inefficiency (Kinnunen, 2006). Bajari et al., (2001) have suggested that the optimal contract price which enriches quality at reasonable cost should be decided in connection with elements summarized in the matrix below:

⁴ It can extract private information (moral hazard and adverse selection) by involving a virtual competition (yardstick competition).

	Fixed Price	Cost Plus
Risk allocation mainly on	Contractor	buyer
Incentives for quality	Less	More
Buyer administration	Less	More
Good to minimize	Costs	Schedule/delays
Documentation efforts	More	Less
Flexibility for change	Less	More
Adversarial relationship	More	Less

Table 2: Comparing FP with C+ contracts

Source: Bajari et al., The Rand Journal of Economics, 2001; 32, 3.

From the table above, it appears that high powered quality incentive can be given to operator through cost reimbursement mechanisms. Such mechanisms consider flexibility by making possible quality adjustments. It is moreover a good device to align both the principal's and the agent's interests. In that sense (interest aligning), cost reimbursement device can mitigate the moral hazard issue described previously. However, cost plus contract puts all the risk on the principal. Consequently, the agent can be tempted to behave opportunistically by deterring quality (Douma &Schreuder, 2002).

Furthermore Bajari et al., (2001) suggested to consider complexity/uncertainty of quality (difficult to monitor) and its importance (relatively to budget or cost) if one wants to make the optimal choice. They defend that if quality is the main objective of the procurer, then a complex/uncertain project (with respect to quality) should be purchased through a cost plus contract in order to boost quality enrichment. However, as the risk of quality opportunism may remain (the agent bears no risk), the public procurer may design the contract so as to share in the risk with the agent. Such design can be achieved through partial cost reimbursement. That is to initiate the contract with a fixed price and thereafter include some cost reimbursement elements, especially if complexity is relatively modest. Such risk sharing mechanisms or partial cost reimbursement devices can be achieved through net contract or gross cost contracts in which a fixed price is first proposed, and then adjusted to major economic changes (indexation of consume price index, financing of additional transferable investments⁵) as time inconsistency shows its effect.

3.4.4 Reputation and trust incentives

In fact quality of experience goods requires in general necessary investments to be done either at the contract initiation stage, or during the contract. Some of these investments are usually not contractible, thus not verifiable by the principal (Laffont & Tirole, 1993) (p. 341).

However such investments can be decisive for quality delivery (personal training for better competence, R&D). For such quality aspect to be supplied, the supplier must have a reputation incentive (Laffont & Tirole, 1993) (p. 211). In other words, the supplier must be willing to signal to both competitors and potential customer that he is a quality supplier. Said explicitly, reputation incentive comes from the competition between suppliers to earn customers' loyalty and secure future sales.

Reputation incentive in competitive bidding can be designed through pre-qualification mechanism or selected-entry in tendering (only invited bidders compete). In such pre-qualification, public authority usually based their choice on past performances, or

⁵ Transferable investments are infrastructure investments necessary for operation which are used by any supplier who win the contract (Laffont & Tirole, 1993)

implicitly on good quality reputation. Therefore suppliers are more concerned about their quality reputation. Reputation can also be carried out through frequency of exchange. To say it differently, long term buying cooperation (frequent buying) with a contractor involves social exchanges (Heide, 1994; Buvik et Halskau, 2001). These social exchanges lead to an increase in the concern of reputation and trust from the contractor side who would be willing to secure future sales. The power of reputation as quality incentive is amplified if competition is aggressive because the contractor will then be willing to differentiate himself as high quality supplier.

3.4.5 Contract duration as quality incentive

Experience goods in most cases involve substantial investments which are necessary to establish supply capabilities or to maintain supply quality⁶. Part of such investments is not easily observed by the principal, thereby the potential of moral hazard is high if the contractor is not sure to recoup the capital cost during the contract period.

It is usually believed that long contract duration is necessary for high investments buying situations. However, long term contract does not oust the potential of moral hazard as the *student syndrome* can be a danger. The student syndrome is when the contractor believes that she has enough time and thus can delay (postpone) necessary quality investments (Parker et al., 2003). The delay of investment can deteriorate significantly the quality. Such quality opportunism embedded in long term contract may also be the consequence of the development of specific relation involved by long term contract. As it has been pointed out in the section 3.4.4, long historical cooperation (long term contract) may tie up public procurer in specific relationship with the contractor through socialization (social exchange).

Another risk of long contract duration is that such contract can hinder competition for public contract concerning experience goods (De Silva et al., 2009). For those goods or services public authority is most often sole buyer. The suppliers who lose such contracts will be out of business for a long period, all of which can cause these suppliers

⁶ See Laffont & Tirole (1993, p. 341), or Kjerstad & Vagstad (2000)

to go into definitive bankruptcy (lack of financial resources to faces costs). In term, the lack of competition will amplify the moral hazard issue.

Short duration contract can as for it discourages investments and leads to moral hazard since the supplier can fear the hold-up⁷ problem. In short contract duration, the contractor can avoid to take high capital cost investments if there is a risk on his contract or license-concession renewal. The reason is that the investments can be relation specific asset and therefore would be lost or sunk if the contract is not renewed.

Effective contract duration incentive must then takes into account the level of investments to be involved. A contract duration relatively short coupled with an extension option binded by quality during the first contract leg can be optimal if quality is very important. The idea is to choose both contract duration and extension in a way that the total duration equals the real capital-recoup time of main investments. The short contract duration during the first leg of the contract can give a quality incentive to the contractor if high quality is the only condition of contract renewal (the extension option).

3.4.6 Sub-contract coordination mechanisms

Osmundsen et al., (2008) and Vickerman (2004) have analysed the conflict of interests between the public authority and the contractor further by extending the contract to sub-contracting. Explicitly, the contractor in public project is usually engaged in sub-contract agreements (sub-part procurements, maintenance of transport infrastructure) with a tier supplier or sub-contractor. In such case, it can appear as well a conflict of interest between the contractor (principal in sub-contract agreement) and the sub-contractor (agent in sub-contract). However the sub-contractor can enjoy substantial bargaining power over the contractor which can weaken the power of the sub-contract incentives. The focal contractor can provide quality incentives to the tier supplier. But if the tier supplier has stronger bargaining power than him, those incentives may not reach the related quality expectations. However it can be that the sub-supply quality is critical for the focal contractor to deliver high quality to the public authority. In the practice, an

⁷ supplier fears that his investments can be exploited by competitor in the case of non-renewal (kjerstad et al., 2000)

example is when the operator of highway exploitation sub-contracts the maintenance service to a tier supplier. If the quality of maintenance is poor, the quality delivered by the operator can be judged poor as well by the authority. It is then important for public buyer to consider the possibility of sub-contract when designing effective incentives to the operators.

Vickerman (2004) explained that three incentive mechanisms can be used: full centralization (planned by authority), coordinated decentralization (authority is involved but don't decide) and uncoordinated decentralization (authority has no insight on). He argues that coordinated decentralization mechanisms can achieve optimal quality enforcement. The mechanism consists to assist the contractor so as to increase his bargaining power vis-à-vis the sub-contractor. Consortium buying can be of help. It is a common buying system in which authority and contractor leverage their collective size (pool their purchase) and drive greater savings on the cost of purchased goods and services. Consortium buying can also help to negotiate better quality in sub-contracting since a high common purchased volume (of authority and operator) can be important enough (compare to the total sales of sub-supplier) to influence the sub-supplier's decision, especially for routine service or products (Van Weel et Arjan, 2005). The following figure summarizes that section.

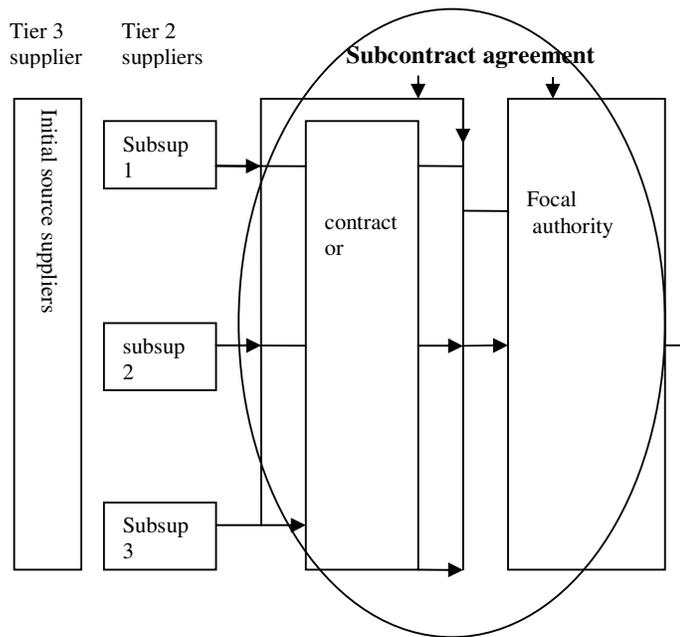


Fig. 1: sub-contracting coordination through the supply chain

3.4.7 Sales incentives

Sales incentives usually fit for search good (whose quality is known with accuracy before purchase). However, there is a typical sort of experience good for which sales incentives can be provided. As Laffont & Tirole (1993)(p.214) enlightened:

We should comment on the possibility of having goods whose quality is observable by consumers but is not verifiable by regulator [public procurer]. We have in mind the case of television station or of a railroad, whose services are hard to measure objectively and yet are relatively well-perceived by the consumers.

For such goods, if the demand is complementary to quality⁸ then incentives embedded in sales will be effective to reach the expected quality (Laffont & Tirole, 1993)(p.214). The idea is that users will not use the service if they observe poor quality in the

⁸ Complementary means that the more quality is good, the more users are satisfied and thus ask for more of that good or service.

delivery. And as long as supplier is remunerated through sales revenues, he will be given quality incentive if he can keep the additional sales revenues (generated by innovative quality) not described in the contract.

Another power of sales as quality incentive is to be analysed in term of future sales. If poor quality leads to loose customer loyalty (complementary between demand and quality), then it is potential that the contract would not be renewed with a poor quality supplier in the future. However as demand is almost inelastic for public goods (in the sense that public procurer is sole or at least the main customer), existence can be jeopardized for that supplier (he/she may not have another market). The fear to come to that point (without market) is obviously sufficient to motivate the supplier to supply the expected quality in current contract.

4. Empirical Evidence

This section will first give a short presentation public procurement regulation in Norway. Thereafter follows the research methodology, and finally the empirical analysis will come.

4.1 Public procurement in Norway

Norway as member of the European Economic Community (EEC) is a part of the European Union (EU) internal market of goods, services, capital and persons. Subsequently the EU regulation of public procurement is in use in Norway (Fafo Østforum, 2006). This regulation carried out by the directive 2004/18/EC of the EU parliament is based on the idea of fair and transparent competition and non-discrimination of nationality (one principle of the commission).

More specifically, this regulation aims at ensuring that all interested economic operators bid for all public contracts and concessions within the EU on a fair and transparent basis. The interest of that regulation is to increase competition, and thereby enhance the quality of public projects at controllable costs (CEC, 2008). With the intention to ban

discrimination and corruption, the directive has introduced requirements about selection procedures, relevant exceptions and thresholds, participation terms, award criteria and enforcements.

In Norway, the instruction **2006-04-07 nr 402** has given the standpoint of a new reglementation of public procurement in conformance with the EU directive. Competitive tendering mechanisms are compulsory to be used if public purchase values are at least equal to some defined thresholds. The following table presents the thresholds in use until the 29th of february 2008.

<i>Instructions for governmental procurement</i>	<i>Threshold vales (excluded VAT)</i>
<i>Central govermental dept. pdt and service purch. The regulation § 2 – 2 (2)</i>	<i>1 050 000</i>
<i>Other principal pdt and service purch., The regulations § 2 – 2 (1)</i>	<i>1 650 000</i>
<i>Yearly instruct. Pronounc. Of planned pdt and serv. Purch., The regulation § 6 – 1 (1)</i>	<i>6 000 000</i>
<i>Part of task (serv.) that can except the EEA instuct. The regulation § 2 – 2 (3)</i>	<i>600 000</i>
<i>Every principal building projects, The regulations § 2– 2 (1)</i>	<i>41 000 000</i>
<i>Yearly instuct. Pronounc. For build. Projects The regulations § 6 – 1 (2)</i>	<i>41 000 000</i>
<i>Part of task (build. Proj.) excepted the EEA The regulations § 2 – 2 (3)</i>	<i>8 000 000</i>

Table 3: Regulated threshold values for public procur. Applying to utilities sector valid 29 februar 2008.

Source: www.regjeringen.no/nb/dep/fad/Tema/konkurransopolitikk

And so, for all public acquisitions applying to the threshold values above, the following tendering procedures are to be used (§ 4 - 1):

- Open tender competition: All suppliers can participate in the competition, but it is not allowed to negotiate.
- Restricted tender competition: only invited suppliers can participate in the competition. In some restricted cases (clearly limited cases), the procurer can engage competitive dialogue.

In the case that the purchased value does not applied to any case above (purchased value under threshold), the procurer can go into direct negotiation. Though, the instruction asks the procurer to secure market competition in most cases possible.

In addition to those threshold values, the main award criteria suggested by the instruction are mainly *the lowest price (cost)* or *the economically most advantageous*. In one case or another, there are four requirements to fullfil in order to secure fair competition (Sunde et al., 2008). Those are mainly:

- *The link of criteria to contract purpose and value:* The award should be linked to the need satisfied through the contract outcome. However procurer can require fullfilment of other elements which she believes can influence the contract outcome. Such elements can be **financial viability, taxes attest, technical qualification proof, Health Security Environment (HSE) policy or employment policy.**

- *Fairness of criteria:* it means ensuring the principles of predictability (specify quality in details so every bidders can predict expectation in the same way), transparency (avoid informational discrimination) and accountability (possibility to verify how the evaluation or selection has been done).

Predictability of award procedure seeks to ensure that all the bidders understand the quality specification clearly and in the same way. For that purpose, the public procurer is expected to described his quality expectation explicitly and to mention future possible modifications while precising the extent of such modifications (CEC, 2008; Trybus, 2006). The latter (accountability) is a critical part of the procedure which needs to be clarified. In fact accountability forces the public authority to set up a clear evaluation mechanism to assess all the bids without favouritism. In practice, public procurer uses

to assess quality with a scale weighting every aspect of quality. The following table give a clear idea of such quality scaling.

criteria	Evaluation weight (%)	Quality specifications
Price	35	Yearly subsidy including partial cost reimbursement
Age of ferry	35	Building year of main boat Age of reserve boat (less weighted)
Delivery quality	30	Preparedness for reserve boat Facility cleaning, maintenance

Table 5: Example of quantitative evaluation of quality

Source: Møre og Romsdal fylke (konkurransgrunnlag hurtigbåtruter)

In this evaluation for example the quality aspect denominated as age of ferry is weighted by 30% in the overall weight of the bid. And every bid proposition is evaluated on a scale varying from 1 to 5 where 5 is the best suggestion and 1 the poorest.

- *Unambiguity or clearness of award:* it is the responsibility of procurer to specify the bid in a way that all bidders understand clearly the specification, and in the same way.

- *Publication or notification:* public procurer should notify any market in the EU TED-database (european public market database) and on DOFFIN (the country public market website).

4.2 Methodology of the research

The research method used in this paper is the Multi-Cases study. Generally the Cases study method emphasizes on either quantitative assessment of the problem, or a qualitative one. We have adopted the qualitative method to carry out this analysis.

Dealing with quality specification in public buying of experience goods and service as the unit of analysis, this exploratory paper emphasizes on the implementation of effective quality incentives suggested in the literature for experience good or service purchasing.

4.2.1 Description of qualitative analysis

The qualitative method is an analysis technique to conduct an in-depth study of one or a small number of Cases to explore a problem.

As Bagchi and Larsen (2002) write, a qualitative study in a case study is desirable when a ‘what’, ‘how’ or ‘why’ questions are being posed about a current set of events or problems, over which the investigator has little or no control. Similarly we want to explore what quality incentives exist in the literature of IT and how these incentives are implemented in day-to-day public procurement practice in Norway.

The issue with the qualitative analysis in a Case study is the problem of reliability/validity and the generalization of the result derived. The small number of observations (few Cases) in such analysis may influence negatively the significance of the results, thus their generalization. In fact those few Cases may be affected by some endogenous or periodic variables which can make it tricky to generalize the results to other Cases. It is therefore recommended to carry out some validity and reliability tests in Case study in general, and more specifically in qualitative analysis (Ellram, 1996).

There are different forms of reliability. Among those is equivalent reliability. It is the extent to which different items measure an identical concept at an identical level of difficulty. Interrater reliability refers to the fact that different individuals come to an agreement after assessing the consistency of the implementation.

Validity as for it is fostered when one can reach an agreement between theory and a specific measurement device or procedure.

In connection to the problem described in section 1.2 we have selected three Cases to carry out the empirical analysis. The choice of these Cases is explained by the fact that they are related to the transportation and the health sectors which have been described as sector with high quality measurement problem. As predict by the literature, we expect high potential of moral hazard and adverse selection in these Cases. So we would anticipate finding prominent examples of extensive use of the quality incentives suggested in the literature.

With reference to reliability, the selected Cases through which the problem will be investigated are different in term of authority buyer, award process, risk level of moral hazard and adverse selection, quality importance and their related incentives used.

The selected cases can be presented as follow:

❖ The tendering of the regional ferry route 32 in Møre og Romsdal County initiated by public authority which was represented by the County administration. The Transport Department (TD) of the administration has been delegated power to carry a competitive tendering process (as estimated budget above the threshold define for utilities - transport service-) on behalf of the authority, thus constituting the procurement function. An open tendering was adopted with the lowest cost as award criterion.

In this tendering, the incumbent has been the sole bidder at the end of the process. However, the tendering has been cancelled because the TD was not satisfied about bidder's price (NOK 20 millions more than previous yearly price). It is important to signal that the tendering took place in high economic conjuncture (finance crisis). The TD considered that the subsequent high capital cost explained the weak competition (the financial risk was high so the bid was not attractive enough for bidders). As well it should be mentioned that quality has been given a very high importance in this bid since a new brand ferry was specified, all of which resulted in high bid price. The TD is now running a negotiated short term contract with the sole bidder (incumbent as well); the TD expects to re-organized a new tender latter and is envisaging to tender a package of ferry routes (increase the scope of the contract) so as to make the bid more attractive to increase competition.

❖ The franchise contract concerning the “hurtigbåtruter” or fast boat route in Møre og Romsdal County. The authority remains the same as in the previous case and the TD was the same buyer. A tendering process has also been used in this case. The contract has been awarded to the company TIDE CRUISE which is operating now. TIDE CRUISE was a new comer in this bid but existed already in the industry. The award criterion was the most economically advantageous which was interpreted as reasonable costs and good quality (age of boat and delivery quality).

❖ The procurement of ambulance service in the health region called MIDT-NORGE RHF. In this procurement situation the administration of this health region was the public buyer. With the intention to restructure the ambulance services (one of its responsibilities) in the districts of Sør-Trøndelag, Nord-Trøndelag and Møre og Romsdal, the HMN decided to contract out such service to private suppliers so as to obtain better value for money from existing budget and improved quality.

Knowing the benefits from increased competition on the expected supply quality, and especially due to legal constraints the HMN adopted competitive tendering with negotiation to govern the contract. The award criterion was the most economically advantageous expressed through costs and pertinence of solutions suggestion with respect to quality specification. Few bidders have been awarded contracts at the end of the process. Among these winners were new entrants in the market with relatively large size and well structured or organized. These big sized new comers went into a lease deal with the small incumbents who have lost to hire their existing competences. However the small operators succeeded to negotiate profitable compensation (salaries) for them. The big sized winners end up a consequence on real operation costs higher than the contracted subsidy level. Many contracts are now retendered again.

As the cases have been briefly presented, we have identified three variables which will guide this study.

4.2.2 Variables in the analysis

Three variables have been chosen to guide the analysis in this study. Those are the quality background, the potential of moral hazard and adverse selection, and the incentives implemented. We may have added more variable in our study to make our result more reliable. However for simplicity reason, we decide to go with these variables to explore the problem defined in section 1.2.

The variables can be presented as follow.

4.2.2.1 Quality background

The quality background refers to the quality specified in the bid as it is understood by the public procurer. The data concerning that variable are collected from the procurement function which carried the tendering (interviews) and through tendering documentations. In addition we have reformulated that specified quality in academic terminology based on relevant literature.

4.2.2.2 Potential of quality opportunism

This variable is designated to explore the risk of moral hazard and adverse selection on the quality as specified in the bid. In other words this variable will help identifying how the contractor can be tempted to take discretionary actions or to hide his exclusive information in order to deter the expected quality ex-post contract. Every aspect of the specified quality in the bid documentation will be analysed according to that variable variable.

4.2.2.3 Implementation of quality incentives

Here we will explore how the quality mechanisms suggested by theory pioneers in the relevant literature are applied in day-to-day practice. We expect to go through how the contract is written to identify which contract aspect can commit the contractor or operator to his/her quality obligation. Thereafter such practical quality commitment will

be linked to one or some of the theoretical incentive devices underlined so far in this paper.

4.2.3 Data set

The procurement function in public administration is usually the major actor in public buying therefore we targeted this function for the purpose of our study. As well, questionnaires have been elaborated based on theoretical and conceptual considerations. It is important to enlighten that our study is of qualitative type. And so, beside the data collected through interviews, we have scrutinized primary and secondary sources of information to provide the additional information needed. Such sources were text books, journals, articles, reports, notification of tendering, and electronic search engines such as DOFFIN (website of Norwegian public markets).

4.3 Empirical analysis

4.3.1 Case 1: The regional ferry route 32 in Møre-og-Romsdal County

Quality background

This Case concerns an experience service as the supply of the service purchased took place after the contract signature. According to the specification, the quality aspects were mainly safety, punctuality/frequency, reliability, responsiveness, timeliness, appearance of personal and their competence, information communication, and access and ease of use.

In fact it was specified a new-brand ferry to comply to new regulation for better safety and security on all norwegian ships. Given the cost of new brand ferry, it can be identified that quality was very important in this bid. Beside safety, reliability of supply was an interest in the contract. Reliability was expressed through a guarantee payment (25% of the yearly contract price) which was asked to bidders. By that guarantee payment an insurance was given to authority ensuring that operator was viable

financially to secure future supply. As well, a detailed schedule has been provided by the authority as a part of the contract specification so as to signal punctuality/frequency to future operator (departures and arrivals were known ex-ante contract).

A reserve ferry (second ferry) was also required to respond to potential schedule disturbance which could be created by an unexpected event (ferry breakdown, unexpected demand surplus). The authority judged necessary to define in the specifications an intervention time window of the reserve ferry (lead time to respond). The definition of such time window was meant to avoid long response lead time, in other words to foster timeliness aspect of quality concerning the reserve ferry.

The authority precised that the crew and other on-board personal should be distinguishable through their uniforms (local law on crew appearance). Ease of access/use was not ignored in the bid as the operator was expected to accommodate ferry access and use for persons with reduced capacities (handicaps).

Finally it was the responsibility of the operator to communicate necessary information about his/her operations (schedules, delays, other relevant information) through brochures, media and display screens recommended inside the ferry.

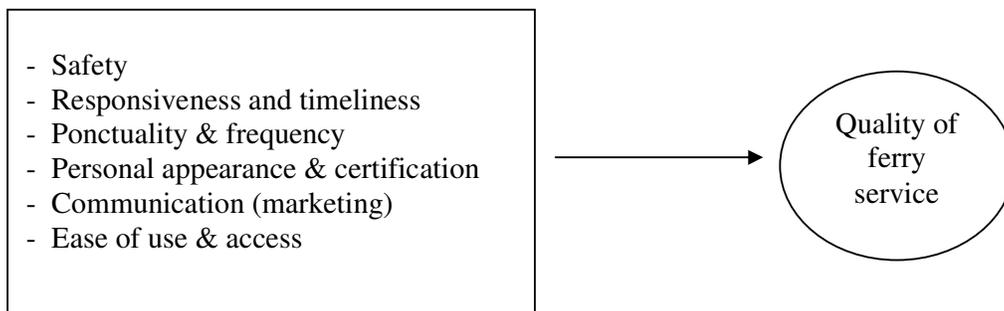


Fig. 2: Summary of quality in the tendering of ferry service in Møre og Romsdal Fylket

Potential for quality opportunism

The TD who was the procurer in this Case and who was in charge to follow the execution of the contract was not supposed to be represented at the operator site for the purpose of quality monitoring.

In general, the users or passengers of transport service observe the supply quality as they experience it daily. That was something the TD could not easily do, especially when they (TD members) are not present on the site permanently. In such case, the operator could cancel some scheduled travels or delay them to deter the punctuality/frequency aspect in order to save some operations costs. He could for example save wage costs since delays or cancellation reduce working time, thus salary of personal.

The potential of moral hazard was high with respect to responsiveness and timeliness. In fact the reserve ferry was supposed to be kept for eventual use. That means the operator was asked to acquire an asset which was not used for production or as it should be, to say it differently.

However as a profit seeker, the firm could be tempted to redirect that asset (reserve ferry) to alternative uses which could generate additional rents or profits for her since the probability of unexpected events appearance (events which should lead to the use of reserve ferry in the focal contract) was a random. In the case that the asset was effectively reallocated, both responsiveness and timeliness would be endangered.

Moral hazard was not the only informational risk, adverse selection was also present. A hit-and-run⁹ company could have been selected to run the contract (as the bidding was open), all of which would end up in poor quality or supply suspension (as that hit-and-run operator could lack required competence and qualification to supply effective quality).

⁹ A hit-and-run company refers to firm which does not meet the requirement but can submit a predatory bid to win and deteriorate later the quality (alexandersson et al., 2006).

Implementation of quality incentive

Various incentives devices have been used in this case to face the potentiality of informational rents and its negative effect on quality.

The TD aware of such risks has first used a screening mechanism to extract information about bidders' financial viability. The payment of a guarantee which was worth 25% of the annual bid price was expected to provide such information. According to the TD, that decision was meant to discourage unserious bidders because the amount was relatively high and it was sunk in the case of quality deterioration.

Another screening device was the requirement to provide a taxes attest. The tax attest recounts bidder's activity (indirectly via taxes payment, the procurer had information about past activity, legal existence, ...). Finally the bidders were supposed to explain their HSE policy and strategies to fulfil specified operations. That gave the TD an insight on bidders' experience and competences.

The TD specified also the use of real-time data system by operator to record ferry movements. These technical tools were according to the TD believed to provide quality monitoring devices. In fact from the data recorded the authority could track how punctual/frequent the operator was. And because a sanction scheme specifying penalty payments for poor quality (such as delay) was specified in the bid, the TD believed that the operator would respect his quality obligation with all those effective monitoring tools. As such tools can involve some opportunity cost (for analysis of the data-time), the TD required in the bid that future operator submits a self report on all contracted quality breaking. To foster the reliability of such self report, penalty payments were provided to punish false report as well. A very poor quality was automatically expected to lead to contract cancellation. In total, the technological devices coupled with the self monitoring mechanisms and the coercive incentives (sanctions) were believed to boost quality effectiveness.

Another monitoring device expected to strengthen the previous enforcement mechanisms was a monitoring system from users named as *decibel system* by the TD. It consists in the ability of users to denounce poor quality in local media (as users observe poor quality by using the service, they will tend to express their unhappiness to make

political pressures).The TD relied then on users to reveal a fail in his own monitoring mechanism.

The TD believed in the benefits of aggressive competition on both quality and costs. Therefore, they released some information they considered as critical for bidders to bid aggressively. The information encompassed statistics on traffic (and revenues at the same time) and local population growth, as well as geography, existing infrastructure (quai).

Such information was meant to reduce or eliminate the information advantage of the incumbent while helping bidders to assess wisely their optimism (accurate estimation of contract costs). It has been shown how unexperienced bidders can submit a overoptimist bid to win and deter quality later (winner's curse). Also there is no doubt that critical information possessed only by incumbent can deter entry (constitutes a barrier for entrant to access a market) thus limiting competition.

Competition was also fostered through transparency in the award process. No private communication between the TD and a single bidder was allowed, all information was made public to all of the bidders in order to avoid corruption. For the purpose of corruption, the TD adopted a quantitative scheme to assess both quality and price so as to provide accountability of the evaluation process which was moreover public.

The TD offered a net contract, which basically means that a subsidy was paid to cover the difference between operation costs and the revenues from ticket sales. The subsidy was fixed in principle, but the inflation level was indexed to it in order to reflect a part of economic changes.

By offering the net contract adjusted to inflation, the TD expected to provide an effective quality incentive. It is clear that the fixed subsidy included in the net contract put a very high financial risk on the contractor. Therefore the TD wanted to share in such risk by covering the additional costs incurred by inflation (general price increase) over the contract duration. Energy price or salaries may increase more than the local Consume Price Index (CPI or the inflation index). The difference (when wage increases more than inflation) is then the contractor's part of risk.

Another financial risk sharing was the fact that the authority took the responsibility to pay for the cost of infrastructure investments (quai). By bearing the cost of such transferable investments the TD removed the fear of hold-up (supplier fear to invest in asset which could be used by competitor if his license is not renewed) which could deter quality.

Continuing with investments, the TD understood how important it was for bidders to extend investment cost over a long period for the capital recoup. If the contract duration is long, the annuity to recoup the capital every year will not be high; and then bidders can submit a low bid-price to win the price competition. However if they face a short duration to recoup the capital, the annuity will be high, thus the price. The TD understood that bidders may submit a low bid to win the contract and behave opportunistically even if the contract duration is shorter. As well if the contract is long they can also behave opportunistically as the TD will be tied in a specific relationship. And so if they offer a short term contract with an extension option, bidders will be willing to submit a relatively low bid price because they will have the second contract leg to complete the recoup. The quality incentive is given by linking the renewal option (extension) to the supply of high quality during the first contract leg. Therefore the TD awarded the contract for 8 years time span with a 2 years extension option. In total the contractor would have 10 years (duration + extension) to recoup the capital cost of his investments if he/she fulfills his quality obligation (satisfactory quality).

The final incentive in this case to be analysed is sales incentives. A quality incentive was given to the operator by allowing him to keep revenues from ticket sales. The reason is that the operator could innovate for better quality or services to create new demand generated¹⁰ and earn additional revenues. For example during the summer season, innovative services can attract tourists and create additional revenue.

Also, it was specified in the contract that a significant increase in the traffic volume more than the one forecasted by the TD (statistics on traffic growth) will lead to

¹⁰ It should not be ignored that the TD has provided traffic forecast which has been used by bidders to estimate operation costs. So the bid price was based on such forecast. In the case of a new demand (which can be generated by very good quality or innovative services), the revenue derived from that new demand is kept by contractor in addition to the fixed subsidy.

renegotiation. According to the theory, renegotiation can generate rents for operator through bargaining power. That is the contractor can negotiate some compensation he could not do at the selection because of competition and regulation.

By increasing its demand more than the forecasted traffic volume (forecasted by the TD self) through better quality, the contractor would force the TD into renegotiation where he could derive.

4.2.2 Caes 2: The “Hurtigbåtsanbud” or the regional speed boat contract

This procurement situation is closer to the previous one studied as the authority remains the same and the services purchased are approximatively of same type: The fast boat carries only passengers while the ferry is used to transport both passengers and vehicles. Because of that similarity, we judge unnecessary to repeat the analysis where there is no significant difference with the previous case.

Quality background

Quality in this Case is basically the same as described in the previous case. The only difference which deserves to be pointed out is that a new brand boat has not been required here. However, it does not mean that the TD did not expect safety to be an significant aspect of quality.

According to the TD, the geography in this Case did not impose particular safety requirements asking for new boat. They (The TD) considered that a well maintained boat could provide proper safety for users. Therefore they specified safety through the age of boat. The TD considered that an old boat could be dangerous.

Beside safety, the TD defined the capacity that the boat should have. The reason for that capacity definition was to ensure sufficient availability on the boat in order to satisfy travelling demand.

The last quality aspect not specified in the previous Case is tidiness. It was explicitly pointed out in the specification that passengers’ facilities should be appropriately maintained and cleaned.

Excepted the aspects of quality described in this section, all the other aspects enlightened in Case 1 were also actual in the current Case.

Potential of moral hazard and adverse selection

As the service purchased here was of same type as Case 1, the potential of moral hazard remains in this Case as well. We have shown in Case 1 that contractor may behave opportunistically with respect to punctuality (regularity and frequency), responsiveness, safety, reliability, timeliness, appearance of personal and their competence, information communication, and access/ease of use.

The new quality aspects introduced in this Case by the TD did not escape from moral hazard. In fact, tidiness is in general difficult to verify because the contractor may accuse users to make the facility dirty every time he (contractor) cleans it. To say it differently, facilities get dirty with extensive use. Aware of that, contractor may avoid cleaning activity (or reduce its frequency) in order to save costs.

As well, extensive use of new boat may make it weaker with reference to safety as compared to an old boat not often used. Also we can interpret the specification of different capacities for reserve-boats as a requirement to keep many boats (one for each capacity specified). In that case, the contractor will bear huge opportunity costs (he loses money by not using the asset regularly), all of which will motivate him to behave opportunistically.

There is great risk of adverse selection on the safety aspect expressed through age of boat. A old boat but well maintained can insure better safety than a relatively new boat but non maintained.

Quality incentives implementation

All the incentives described in Case 1 have exactly been used in the same way. We judge therefore unnecessary to come back to them. However, there are elements we would like to underline here.

The TD allowed the contractor to charge some of the operation costs on passengers. It was specified that the contractor could increase fares until 4% more than the increase in CPI¹¹. Such direct charge was considered as quality incentive because it reduces the high financial risk bore by the contractor when energy price or wages increase more than the CPI. And so the contractor could use such possibility (fare increase) to charge such additional quality costs. This can mitigate in term the quality opportunism.

As well, the contractor had the possibility to restructure the boat allocation (schedule and frequency) as described in the bid. In fact, it could happen that the contractor faces no demand for certain schedule at certain point of time. However, as the contractor was forced to respect the schedule, he would have operated inefficiently (the ferry travel without demand). Therefore the TD allowed him to reduce the travel frequency where the demand was low and reallocate the boat to increase the travel frequency in other places where the demand was high. Such flexibility in boat allocation can help the contractor providing better quality (satisfy demand increase) and generate appropriate revenues. It can also lead to cost savings in operation costs. Flexibility in boat allocation can thus motivate the contractor to redirect those savings to quality investments. As such flexibility can also lead to moral hazard, the TD specified that the total route production (in kilometers) should remain the same. Explicitly, the contractor should supply exactly the expected quality and not use the flexibility to deter quality.

4.2.3 Case 3: The procurement of ambulance services by Helse Midt-Norge

Quality background

Quality in ambulance services is usually complex to define. Generally quality includes maintenance of equipments and facility, efficient communication center (call taking, resources deployment), operation responsiveness and timeliness, safety and risk

¹¹ The TD allowed the contractor to increase fare up to 4% in addition to the indexation of the CPI.

management (vehicles, employees, patients), organization management (public relation, human resources, insurance, response plan), and integration of ambulance firm to hospital and other emergency agencies. Those elements have been taken into account in the specification of the bid as follow:

✚ Facilities and equipments maintenance: it should be included in the bid explanation about parking and car cleaning policy, offices and room availability for training or teaching, garderobe and sleeping rooms.

✚ Responsiveness and timeliness: the bidders were required to explain their response plan. Also a time window for intervention was specified. Finally a requirement was made about the availability of intervention personal (operational human resources) to foster responsiveness and timeliness.

✚ Organization management: the bid has specified how public relation management will be carried, certification and knowledges updating of personal to master clinical standards.

✚ Integration of ambulance firm to hospital and other safety agencies: it has been described how information should be coordinated between the operator and the buyer representations (through e-mail, telefaks,...), as well as the imposition of a standard format for incident reports (Ulstein, ambulance journal,...) and uniforms wearing.

✚ Safety and risk management: It is related to the specification about patient and personal property, the type of vehicles, incident reporting and appropriate instruments to be used on-board.

✚ Efficient communication system: that has been expressed through the specification of technological communication tools to be used by the operator in each ambulance.

The following figure summarizes the quality aspects in this procurement:

- Facilities an equipment maintenance
- Responsiveness and timeliness
- Organization management
- Integration of ambulance firm to hospital and other safety agencies
- Safety and risk management
- Efficient communication system



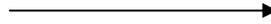


Fig 3: Quality aspects of the ambulance services

Sources: The American Commission on Accreditation of Ambulance Service (CAAS), (www. Caas.org, 09.05.2009)

Potential for quality opportunism (moral hazard and adverse selection)

Ambulance services in principle are out-of-hospital care services. It is then in principle difficult for the procurer to measure quality performance because only the patient can observe it. In such case, the potential of moral hazard in general is high for those services. For example, it is difficult for HMN (the buyer) to verify how long time (responsiveness) the contractor takes to perform an emergency operation when he receives a call.

As well, on-board personal should in principle give the first treatment to the patient during the evacuation (intensive cares in case of heart attack for example). In the case that the patient passed away during the evacuation, it would be difficult to verify if on-board personal (nurses) have done their job properly.

Another moral hazard potentiality is the fact that the contractor was required to hold some training programmes so as to update personal knowledges and competences (how to handle patient with new diseases such as the FLU). However as such programmes incurs costs for the contractor, he can be tempted to avoid them even though those programmes will boost personal effectiveness (better quality). The same issue appears as the operator was required to integrate his organization to hospitals and other emergency agencies. Such integration can create important investments (EDI, real-time data system) and generate related transaction costs (hold up), all of wich can discourage contractor to engage such investments necessary for quality.

For all these potentialities of information risks, the need to design quality incentives can be helpful to provide quality commitment.

Quality incentives implementation

Competitive tendering with negotiation is basically both an effective screening and a reputation incentives. In fact, the HMN has carried a prequalification process which helps to reject unexperienced and unserious suppliers. The prequalification has been followed by a dialogue or negotiation to make necessary adaptations. The negotiation process in general allows the procurer to get closer to each bidder.

And through such proximity the procurer can learn closely about bidders competences, qualification and reliability. The two devices are enough to discourage unserious bidders and keep them from entry. In other words, competitive dialogue can be an appropriate answer to adverse selection.

Coercive quality incentives were other screening incentives provided to contractor. The contract specified that the contractor would pay damage compensations to the Norwegian Patient Compensation (NPE) in the case that patients undergo damages during evacuation operations. Such insurance mechanism can force the contractor to train his employees properly or to foster the safety aspect of quality in this case.

Beside such indirect sanction, the contractor was informed in the bid about the deduction of 0,1% in the contract price if poor quality was remarked. To reveal such poor quality, the HMN specified that internal audits will possibly be carried if the case (poor quality) was suspected.

In the specification, the HMN showed his willingness to apply transparency and non-discrimination principles. Elements proving those are the adoption of sealed bids, restriction on private contacts between procurer and bidders. By doing so, the HMN expected to create conditions of fair competition as the benefits of the latter (competition) on quality could be significant.

It is moreover for the purpose of fair competition that the HMN held bidders' identity confidential. As claimed in the literature, opacity on bidders' identity can eliminate vague desires of tacit collusion (Amaral et al., 2008). Beside the previous elements to

promote competition, the HMN also fostered dual sourcing to maintain future competition. In fact the health region was divided into several areas and each of those areas was tendered separately instead of offering a single package. It was expected that many bidders would be interested so as to increase competition.

As it has been stated above, ambulance services are generally complex services. They necessitate important investments to be done. These investments can be observable (equipment), non verifiable (trainings), or even non transferable (competences, learning by doing). As predicted by the theory, partial costs reimbursement incentives (fixed price with inflation indexation) can motivate contractor to carry such investments. The price form used in this Case was gross costs¹² contract. The gross costs contract as opposed to net contract consists to pay a whole fixed subsidy every year which are supposed to cover all the operation costs of operator. That is the contractor would not keep any sales revenues but can perform sales activity for the principal. As health care is free in Norway, there was no sales revenue in this Case. Such fixed price mechanism was then expected to be adjusted in order to take into account exogenous changes such as wages and CPI. The following mechanism was adopted for adjustments:

*Adjusted price = 70% * changes in private nurses' salary (statistic provide by the Statistic Office) + 30%* changes in CPI (CPI₁₉₉₈= 100)*

The above formula for the price adjustment can be interpreted as 70% of wages increase would be indexed to the fixed price every year. It is just 30% of the inflation which was indexed to the price. The reason for that is to reduce the high financial risk bore by the contractor when wages increase more than the general inflation (interpreted as CPI).

Beside the above price modification from the second year, the HMN decided to cover ferry costs (when evacuating patients from islands), and to pay compensation to contractor for eventual introduction of value added taxes (VAT).

With respect to reputation as incentive, the HMN adopted competitive dialogue as governance structure. In general competitive dialogue is engaged with well known

¹² Gross costs contract pays the operator a global sum to provide a specified service for a specified period. All revenue collected is generally for the authority, but in this case there is no revenue because health care services are free in Norway.

suppliers in the market (experienced suppliers known for their quality). In other words, the HMN selected the potential suppliers for negotiation according to their good quality reputation. The HMN believed that suppliers would be more concerned about their reputation as good quality suppliers for future sales since it was obvious that a contractor who will behave opportunistically will not be contacted for dialogue in the future.

Sub-contracting is generally a practice relevant for ambulance firm. The sub-contract concerns most often a critical part of the contract (communication center for example). To say it differently, the quality supplied by contractor can significantly be influenced by the quality of sub-supplier or tier 1 suppliers. It has been pointed out in the literature that a firm can influence the quality decisions of its suppliers if the purchasing volume of the first (firm) is relatively important compared to the aggregated sales volume of that suppliers (Van Weele & Arjan, 2005). The reason is that high purchasing volume will give to the firm an importance vis-à-vis the supplier. And from that importance the firm can derive a bargaining power to negotiate a better quality or a lower unit cost.

The HMN aware that the sub-contractor may have stronger bargaining power than the contractor to influence the contract quality, proposed a common buying mechanism with the contractor. It must be understood here that such common buying or consortium buying may increase contractor's bargaining power (common with the authority) vis-à-vis the tier supplier. For example, the HMN took the responsibility to sub-contract directly with ferry firms as the first has more bargaining than the contractor vis-à-vis the ferry company. As well, the HMN proposed another consortium buying for certain standardized or routine products. Those are generally products which are bought in small quantity from many suppliers. Because the HMN is responsible for many hospitals, it had already a pooling mechanism (centralized buying for many hospitals) which gave it a bargaining power. And by buying for the contractor, the HMN increases even its own bargaining power (additional purchasing volume of the contracted), and hence can influence sub-supplier's decision for improved quality and costs saving (ordering & units costs).

Contract duration mechanism was also used to create quality commitment. In fact, it was specified a contract duration of 5 years. And in the case that bidders acquired new brand equipment (vehicles), 5 years may not be enough to recoup the capital costs. Therefore the HMN offered a 3 years extension option which was conditioned by a good quality delivery during the first 5 years. Contractor was then expected to be motivated to supply the expected quality through such extension option in order to have 8 years for recoup.

5. Critics and suggestions

Table 5 provides a summary of quality incentives implemented in the three cases we have studied so far.

The message from what we witnessed in this study is clear: There is a high risk on quality expectations in public experience goods contracts, especially when these goods are acquired through competitive tendering. While the sources of the quality risks are well known (moral hazard and adverse selection) the formulation of appropriate answers to mitigate them can be challenging in the implementation.

Screening incentives for example at the award stage are believed to boost future quality by eliminating adverse selection. Different devices have been used in this study to extract the hidden information (see Table 5). In Case 1 the most potential hidden information which can damage future quality is contractor's qualification and competence since a new brand ferry is easy to recognize. The devices used seem to be adequate to extract such information. As Kjerstad et al. (2000) have shown, guarantee payment involves self selection which can discourage bidders who don't meet the basics requirement of qualification (unserious bidders), and therefore mitigate the risk of asymmetry information.

However there is a doubt on the effectiveness of guarantee device in Case 2 with respect to safety. In fact, the potentiality of hidden information may be higher on the safety aspect in Case 2. The reason is that safety was translated into age of boat in the Case. We have already shown that age itself was an inefficient measurement of safety because

other elements such as poor maintenance and extensive use can make a young boat unsafe. Neither guarantee nor taxes attest and HSE declaration seem suitable to reveal how bidders maintained or used their boat in previous contracts in order to fill the gap. One can think that the procurer may extract such information by having closer contact with bidders. For example the use of competitive dialogue as in Case 3 may have more effective in that sense.

For the use of competition as quality incentive, it was smart that the buyer in all the 3 Cases studied so far, understood the importance to remove the informational entry barriers. The release of statistical information on traffic, population and geography in Cases 1 and 2 was helpful as it may reduce the winner's curse. Indeed, the effect on winner's curse may have been successful if bidders were oriented on engineering costs and weather condition in the Case 1. According to the specification, the new brand ferry required in the bid was explained by the particularity of the weather conditions present in the areas, which necessitate an increase in the safety aspect of boat. Such environmental uncertainty added to the financial uncertainty (high economic conjuncture) increased significantly the risk bore by the contractor. That may explained the weak competition noticed in the bid (only the incumbent was the sole bidder). An explanation can be found in the high potential of moral hazard as possible alternative for the operator to survive (as competition will drive price down). So the firms concerned about their reputation may avoid entry in order to not behave opportunistically ex-post to survive.

Also it may be that the concentration of the industry in Norway (only few operators are present) aggravated the effect of high uncertainty on competition in Case 1 since the incumbent had an information advantage on weather conditions than them. Explicitly the few operators may have avoided competing because the incumbent had more strategic information than them; and as it were other ferry areas in the country they expected no competition as well in the market where they will have information advantages.

The public procurer may have increased competition in this Case by releasing information on weather conditions so as to reduce the uncertainty. There are in general many strategies to do so.

As Amaral et al. (2008) advised, the procurer can for example with his discretionary power hold a public entity and competes the same service delivery with private firms in another area with similar environmental uncertainties. By doing so, public authority could have had an insight on engineering costs, weather, and thus quality standards for benchmarking. Such benchmarking known as Yardstick competition is a part of dual sourcing. The procurer in Case 3 has used such mechanism. He has segmented his health region in many sub-areas or market segments and held public ambulance operators in some of these areas. The fact to carry out competition for the access of areas non-operated by public entity can be beneficial for quality expectation as well.

However the effectiveness of such incentive depends on the size of the segment and the market structure. Solvoll & Mathisen (2008) has shown how market concentration (oligopoly) in the bus industry in Norway involved by aggressive competition (predatory pricing and cross subsidization) favours tacit collusion. Competitors avoid real competition and instead of, share the market segments among them. Amaral et al. (2008) came to the same observation in the bus industry in England. It is therefore important for the procurer to not offer too many small segments for bidding if the entry barriers are generally high in the industry (high investments) and especially when the market is concentrated such as the ferry sector in Norway. Those few actors may avoid aggressive competition especially when the number of segments is more than the number of bidders. The procurer can instead of, organize them in packages to make them more attractive for increased competition¹³.

To minimize the impact of tacit collusion on dual sourcing mechanism, opacity on bidders' identity can be appropriate, especially if the difference of costs in the industry is significant. In fact the other competitors may punish the firm who break tacit agreement if his identity is discovered.¹⁴

¹³ As the size of market is relatively important (relatively few markets) tacit collusion will be difficult to maintain in an oligopoly since it will not be enough to be shared for all.

¹⁴ If costs are significantly different in the industry, the effective competitors can punish treachery through predatory pricing (Alexandersson, 2008)

Incentives for quality commitment		Case 1	Case 2	Case 3
	Screening	- Guarantee - Taxes attest -HSE policy declaration - Real time data record - Self report -User monitorin/decibel -Monetary sanction /compens.	- Guarantee - Taxes attest - HSE policy declaration - Real time data record - Self report - User monitoring/decibel -Monetary sanction /compens.	- Prequalification - Dialogue/ negotiation - Audit - Patient damage compensation - Monetary sanction payments
	Competition	- Info Release - Transparency -Quantitative Evaluation of quality	- Info Release - Transparency - Quantitative Evaluation of quality	- Process transparency - Hidden identity of bidders - Dual sourcing
	Contract Price	- Net contract - Inflation indexation -Bear transferable investmen	- Net contract - Inflation indexation - Fare increase -Bear transferable investment	- fixed price (1rt year) - inflation indexation -Partial costs reimbursement (ferry)
	Reputation	N.A	N.A	-Negotiation with known supplier
	Contract Duration	- 8 years -2 years extension option	- 6 years - 2 years extension option	- 5 or 6 years - 3 years Extension option
	Subcont. Agr.	N.A	N.A	- Consortium buying
	Sales	- Revenue of new demand -Renegotiation through sale	- Revenue of new demand - Renegotiation through sale - Flexible frequency	N.A

Table 5: Summary of Incentives implemented in the three Cases

The evaluation of quality policy in quantitative language is to be applauded in all the 3 Cases. In fact such measurements provide accountability of decision making as anyone can easily identify the winner of the tendering through them (.....). They can also discourage corruption when coupled with transparency (sealed bid, public opening, and no private contacts). Quantitative evaluation of quality may avoid conflict which involves substantial transaction costs. For the latter, one must be careful when setting in the evaluation because some aspect of quality cannot objectively be quantify.

In fact how can the procurer rank objectively different bids on one quality aspect? To say it differently, can he objectively say that one bid is better than another on a quality aspect? For example if one wants to evaluate how the intervention operations (evacuation lead time, first cares) in Case 3, is it objectively possible to say that one bidder is more effective than another based on the description? The same question can be asked for facility cleaning in Case 2. The procurer may base on the frequency of cleaning suggested by bidders to decide the best bid. However a cleaned facility may be explained by the material used (soap) or other aspects difficult to measure objectively.

In definitive quality is objectively not easy to be measured quantitatively. Therefore its evaluation can be subjective, and so favouritism or corruption may occur from such evaluation. Di Tella and Bliss (1997) have pointed out such paradox when measures to fight against corruption end up finally in corruption.

The specification of new brand ferry in Case 1 can weaken relatively short contract duration as quality incentive. In fact, it usually takes more than 10 years to recoup such investments (ferry). For that reason a risk premium can be included in the bid price by bidders. But because of competition, some bidders may underestimate the risk and submit low price. In that case there is a high probability to choose an overoptimist bidder as the award is the lowest cost who may be a hit-and-run firm.

Besides, moral hazard can appear if there are few alternatives to redeploy the asset (ferry investments can be relation specific asset) in the case of non renewal of licence after the 10 years. But as there is a risk on contract renewal, the contractor can deter quality to save cost as a counterparty of the recoup to be sunk in the case of non contract renewal.

One may claim that it can exist a lease market for ferry in which the firm buying a new ferry can redeploy it. Indeed, but it must not be ignored that a profit seeker may not be willing to lease a new brand ferry to competitor.

In Case 2 for example, the duration incentive (extension option) has high probability to be successful. The reason is that the contractor has the possibility to lease easily a used fast boat in the lease market (as new brand is not required in the bid). That can lower the investments costs for fast boat, and thus mitigate the issue of recoup time. As well, the short duration can avoid the public procurer being tied in specific relationship. Consequently the procurer will be able to switch poor quality contractor in such case.

The same can be achieved in Case 3 as well (lease market for ambulanse equipment and personal).

There is another issue raised by short contract duration. It is the question of market entry for entrants. In fact short contract duration is favourable for existing engines park (with respect to recoup), namely for bidders already in business. Short duration can be said to kill competition. And so may do long contract duration, as we explained earlier that long contract duration may fasten in specific relationship the public buyer and increase the risk of high opportunism. The choice of contract duration must then takes into account the amount of investments and the potential of moral hazard.

There is no doubt about the significant benefits of subcontract coordination (consortium buying) between authority and contractor on quality expectation. However such agreement can make it difficult to switch one contract to another supplier. The explanation must be found in the fact that common buying can force public procurer and current contractor to share the same supplier. The litterature in purchasing demonstrated that frequent buying involves social exchanges between buyer and seller, which in term ends up in specific relationship (Heide, 1994; Buvik et al., 2001). In other words authority and contractor together can be binded in specific relationship with the same supplier. As specific relation is difficult to break, the current supplier can keep the same supplier even if its contract is not renewed with the public buyer.

So in that case, the next contractor (when the contract of the current is not renewed) and the previous one can be forced to share the same supplier. The reason is that the public authority can as well keep the mentioned supplier so as to continue his consortium buying policy every time there is a new contractor. In definitve, the two competitors may be delivered from the same supplier.

It has been shown how such connection known as network connection or supply chains overlapping (linkage of different supply chain) may damage competitiveness (when two competitors share the same supplier).

The self report mechanism binded to technological monitoring tools in Cases 1 and 2 must be applauded. The two mechanisms help the TD to avoid the costs that will incurred (for monitoring, performance record data analysis, auditing work as it is done in Case 3). Also the monitoring possibility given to users (decibel system) can boost quality expectation. In fact, as users can observe quality in daily usage they provide an effective monitoring tools (without any cost for authority).

However it can be a doubt on trust and objectivity of users' report of poor quality. For example judgement on courtesy of personal (a part of quality in Case 1 and 2) can be subjective. One user can appreciate positively personal's courtesy while another can see that personal not polite.

The same subjectivity of users' judgement can happen if we considered the tidiness aspect in Case 2. We shown in the related section that such element is difficult to measure. So the veracity and objectivity of users report (decibel system) can in many quality situations raises lot of discussions.

In Case 3, the sanction device based on patient damage compensation seems to provide expected result. It may force the contractor to provide better service to patient during operations (first treatments during evacuation). Nevertheless, it may show some limits if we consider the responsiveness and timeliness aspects of quality. Patient may incur damage if the ambulance come late when called. But it may be difficult to verify that such patient damages are caused by delays in intervention.

Moreover those quality aspects (responsiveness and timeliness) seem to be not addressed in the design of incentive as it is difficult to relate them to existing incentives in the bid. We can suggest for example monitoring mechanisms based on a common communication center coordinated, or operated by the public authority or a sovereign third party. Such data record coordination (communication center) binded with self report incentive (of accidents, delays) provided by the buyer in the bid may increase responsiveness. In fact the buyer will then have the possibility to determine self or through the third party the intervention lead time every time an emergency call is taken for control (in the case that self report is not trustfull).

The contract price mechanism used in Case 1 may increase the risk of quality opportunism. In fact it put a high financial risk on the contractor since it was only the inflation which

was expected to be indexed. However, there is a risk that the main accounts of operation cost (energy price, wages) increase more than the inflation. Such risk in addition to the high uncertainty (financial and environmental) may involve that the contractor deters quality to hedge against these uncertainties. In Case 2 and 3 for example, the procurer has taken appropriate measures to reduce such risks. The increase of salary is covered up to 70% directly by the authority in Case 3. In Case 2, the authority has allowed the contractor to charge a part of such risk to users, but the risk may still high (the maximum to be charged is 4% after inflation). Therefore the risk of opportunism may remain.

Conclusion

In this paper we have tried to explore the effective quality incentives that incentive theory pioneers have suggested in the literature to cope with the issues of adverse selection and moral hazard in public contracts. Our intention was to investigate how these theoretical incentives were implemented in day-to-day public procurement practices in Norway. Three public procurement Cases have been chosen for the purpose. The choice is explained by their high degree of quality uncertainty (experience goods) which makes them ideal candidates for moral hazard and adverse selection.

In total eight incentives schemes have been pointed out in this paper. Those are screening, competition, contract price, reputation, contract duration, subcontracting agreements for coordination, monitoring, and sales incentives.

For the issue of adverse selection or hidden information generally present at the supplier-selection stage of experience service contract, public procurer has the screening incentives as tool to face the problem. In practice various strategies are used to implement those incentives in practice. Some of them appear to be guarantee payment, taxes attest and HSE policy declaration, and competitive dialogue (competition with negotiation). Those strategies seem stronger in practice to discourage hit-and-run company or unserious suppliers from complex public contract biddings. Public authority can strengthen the impact of these tools by specifying objectively expected quality.

Furthermore, devices such as increased competition, contract price, reputation, contract duration, sub-contract coordination agreements, monitoring/sanction, and sales incentives can be provided against hidden actions or moral hazard. However some of these incentives can be incompatible to other. Explicitly public procurer should be careful when designing those mechanisms because some of them can hinder the other and produce undesirable effect.

For example, we found that reputation incentives can be implemented through negotiation or selected entry. Such implementations can limit competition, thus mitigating its effect. They can also end up in specific relationship in which the opportunism may be high as it may be difficult to switch the contractor even if he supplies poor quality.

As well, contract duration (long contract) can have negative influence on future quality since the competitors losing public contracts can be out of business (without demand) for

long time, all of which force them into bankruptcy. Longer duration may also involve specific relationship which can lead to quality opportunism (Douma &Schreuder, 2002). However long contract duration may encourage high investments, and thus increase quality. The paradox created by the contract duration may be solved if one set a shorter contract duration with an extension option binded by quality. The idea is that short contract duration may discourage quality opportunism embedded in specific relationship while the extension option can encourage investments.

Future research

In this study, the objective was to explore the theoretical quality incentives suggested by theory pioneers, and investigate how there are implemented in practice. The observation we have made is that some of these incentives may hinders other.

We suggest that further investigations should be done in order to investigate quantitatively the effectiveness of these quality incentives implementations.

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