Market innovation in the transport and heavy vehicle market

Abstract
The purpose is to better understand the interrelatedness of new business models in the truck market and developments in the road transport sector. Based on a three year research project in cooperation with a European heavy vehicle manufacturer, we describe short cases showing some of the business models in use and demonstrate changes and the relations between the markets trucking and transport.

New business models emerge both in the heavy vehicle and transportation markets, in complex ways involving multiple actors. The impetus for the models can come from several directions but the final impact must be negotiated and cannot be planned by a single actor. The paper considers the development of new business models and implications on the market from the point of view of the firms actually using the business models. This shows how different business models can co-exist and involve different types of rationalities.

Keywords: heavy vehicles, innovation, business models, transportation, market development.

Introduction

With a seven-percent share of GDP, transportation is one of the largest industries in EU (European Commission, 2012). Road freight transport is the key segment in this sector, accounting for 73% of all inland freight transport activities (European Commission, 2011a). In spite of its central role in facilitating global and local trade, the transport services is a market of very low margin and many operators struggle to remain profitable. Road transportation is also often portrayed as a key contributor to global pollution and is responsible for a great number of accidents (European Commission, 2011b). For these reasons, road transportation is currently under scrutiny in most countries with particular emphasis on transportation efficiency.

Developing transport innovations is, subsequently, a key question for policy makers as well as industry actors, innovations that relate to infrastructure, transport vehicles and transport business models. These trends are reflected also in academic interest in road transportation and calls have been made to develop a more critical understanding of how the road transport market develops rather than just considering it as a static commodity market in a neoclassical sense (Borgström, Hertz, & Jensen, 2014; Sornn-Friese, 2005). While a neoclassical view on the road transport sector may serve a natural role in discussions of deregulation, subsidies, quotas and international trade, it is perhaps not equally useful to understand the emergence of innovations and, for example, the changing role of sustainability. To that end, we need to move beyond the gap-spotting approach typically employed in the rather single-minded development of cost-focused transport research agendas and disrupt such reproductive tendencies by problematizing (cf. Sandberg & Alvesson, 2011) the road transport market concept.

In response to calls for a more problematized view on the road transport sector, this paper aligns with the "market-as-process" approach (Araujo, 2007; Kjellberg, Azimont, & Reid, 2015; Kjellberg et al., 2012). This means that we conceptualize markets as on-going processes that are co-created by a multiplicity of interacting actors (Kjellberg et al., 2015) rather than take-for-granted categorizations of actors. We consider the boundaries of markets to be fluid as the innovative behaviors of providers, customers, regulators and other stakeholders redefine their location and content (Doganova & Karnøe, 2015). In other words, markets take their form in a "bottom-up" process as innovations are introduced, stabilized, de-stabilized, and reshaped in a process where competing value paradigms clash (Akrich, Callon, & Latour, 2002). This means that the business models of market actors not only represent their (existing or desired) position vis-à-vis a static market entity, but should be considered as their participation in a market-shaping process. New business models, in turn, take shape in the interface between market actors, e.g. as buyers select elements of a provider's offering and use these in innovative ways or when offerings are jointly developed to suit a particular value-creating system. We thus understand business models as co-created devices that contribute to a multiplicity of co-existing market versions: "different versions of the same market that are performed simultaneously need not be at odds with each other, but may more or less peacefully co-exist" (Kjellberg & Helgesson, 2006:849)

The purpose of this paper is to generate a greater understanding of the interrelatedness of new business models in the truck market and developments in the road transport service sector. Rather than considering the truck market and road transport service market as separate entities in a neoclassical sense, we thus emphasize their complex interrelatedness. The former can be seen as largely derived from the latter since trucks are tailor-made for particular purposes and either need to be replaced or re-configured to achieve operational efficiency when transport firms develop the scope of their business. Developments in truck technology may also impact

the demand for transport services; as less environmentally damaging technology is made available at lower cost by truck manufacturers, transport buyers increasingly place demands on sustainable transport services. Therefore, developments in the truck market should be understood in light of developments in the transport sector and vice-versa. As business models on both markets are intimately connected, de-stabilization and stabilization of one market may have de-stabilizing and stabilizing effects on the other market.

This paper has five additional sections. In section 2, we further explore the notion of business model innovation as a "bottom-up" way to understand market making. Section three discusses dominant paradigms in the transport market and how these may influence truck-purchase decisions. In the fourth section we discuss the method of our empirical inquiry, the results of which are presented and analyzed as a series of case vignettes in section 5. The sixth and final section elaborates on the theoretical and practical contributions of our work.

Truck market(s) on the move

What is a market? From a legal point of view, markets, such as a single market of EU, are often relatively easily defined. "A playground is set". From a business administration and a marketing view there are many ways to play: *Markets are shaped in processes* that define the playable playground (Kjellberg et al., 2012). This means that a more informed question is: What becomes a market? Many actors take part in performing market processes and these actors have different perspectives, competencies and values. We might say that the actors know about and believe in competing "value paradigms" and strive to perform markets-as-processes in line with these.

The associate editor of the influential journal *Marketing Theory* argues that markets can be seen as institutions (Araujo, 2007). An institution is an "*(observable) pattern of collective action, justified by a corresponding norm"* (Czarniawska, 2009:423). Which value paradigm

becomes successful depends on the spirit of the time and how, for example, a business model can attract interest of inter- and intra-organizational allies and can become a stabilized way of doing business.

A special issue of Industrial Marketing Management, 2015) is centered on the notion that markets are ongoing processes rather than stable entities (Kjellberg et al., 2015). Any market is made and re-made in marketing processes in which market devices, such as pricing models and business models influence the market in question (Callon, Millo, & Muniesa, 2007; Doganova & Eyquem-Renault, 2009). When they succeed they stabilize a market institution. Market devices are means of innovation. Despite recognition that innovation processes have both a technological and a market dimension, "*innovation research has remained technology-focused*" (Kjellberg et al. 2015:4). Market innovation engages in relations involving network of buyers, sellers and offerings. How do the market device(s) work?

The business model as a market device allows practitioners to explore the market (Doganova & Eyquem-Renault, 2009). The result is that the business model is made and re-made in interaction involving numerous social actors, e.g. in processes of adaptation, series of trial and error, and countless negotiations (Akrich, Callon, Latour, & Monaghan, 2002). Doganova and Eyquem-Renault (2009) study an entrepreneurial venture by focusing on the business model's materiality and use. In a fascinating illustration of an academic spin-off product, the venture and the partners involved, they show how the business model is adapted and transformed through links with other companies, companies that become partners and competitors in the value chain. The business model presentations are adapted in order to attract allies. The core, the technology of the business idea, is homogeneous but the presentation is adapted in order to attract different calculative agents "*in the networks of sociotechnical relations constituting the buyer's world.*"(Callon & Muniesa, 2005:1234). Doganova and Eyquem-Renault (2009)

argue that specific costs and revenues are consequences of relationships with particular partners, more precisely, consequences of what the offer might do for the buyer.

> "[t]he twofold constraint weighing on a product if it is to become a good: that of objectification (it has to be a thing) and that of singularization (it has to be a thing whose properties have been adjusted to the buyer's world, if necessary by transforming that world)." (Callon & Muniesa, 2005:1234)

This implies that the customer who makes sense of a specific offer might actually transform not only its own business model but also impact the institutional setting it is working within. Not because of a technology but because of its potential to do things in another way. Actors' perspectives, competencies, values become adapted.

Many buyers on the truck market are small producers of heterogeneous transport services at the edge of bankruptcy, transaction-based exchanges and low degree of transparency (European Commission, 2014). Heavy goods vehicle manufacturers are few, their products are homogeneous and serviced in local networks. Premium brands are important in the trucker culture and are by many truck owners seen as having special values, what may be understood as "aesthetic economy" (Sköld, 2008, 2009). The manufacturers are active in developing in-vehicle innovations related to powertrain, chassis, ICT, exhaust systems, tires and equipment (McKinnon, 2009). Beside these technical innovations are innovations in services related to fleet management, driver's skills and fuel efficiency. The bundle of services offered shift the boundaries of truck manufacturer responsibilities and truck buyer responsibilities. Service-based business models concern each party's roles in value creation and have implications for the revenue models of each party (Karlsson, 2012). But does such a business model fit the interests of buyers? Is this a market innovation that can transform the buyer's worldview of economization, innovation and sustainability? The differences in views on the market as a static object compared to a fluid process involves, among other things, finding out what

market devices do, such as the manufacturers' shift from a product-centred business model to a service-centred business model.

Paradigms in the road transport service market(s)

Road transportation comprises at least three powerful institutional settings; innovation, in order to transform the market; economization, in order to facilitate cost efficiency; and sustainability that purposefully weighs economic, ecological and social objectives.

Reigning paradigm relies on valuation. There is a reproduction and transformation of market structures that depends on who is influential and how these influential actors value goods and services (Araujo, 2007). In a market such as a mass retail market, the power of the experts that calculate value lies is on the supply side. In a business market the demand side valuation is more influential. Professional purchasers' work with certifications, life-cycle costs and other evaluation metrics becomes influential in shaping the market. In the road transport service market professional purchasers have little knowledge of how to evaluate.

In the road transport service market the three "value paradigms", i.e. innovation, economizing and sustainability, co-exist and form a context for market innovation. These can be seen as contrary forces that constantly engage each other and are basis of explorative learning (Hoholm & Olsen, 2012).

The Innovation Paradigm

Technical innovation based on research and development is needed to secure a competitive and resource-efficient transport system (European Commission, 2012). On the one hand policy makers claim the drive for innovation in the road transport sector is limited (High Level Group Report, 2012). It is not only the sector's fragile economy but also a lack of awareness of the importance of innovation in the fragmented sector. Larger logistics companies as well as truck manufacturers are driving new ideas as well as R&D activities

because they are better equipped in terms of e.g. management resources to recognize and implement strategic innovations. On the other hand, the sector has taken advantage of a wide array of innovations for decades (McKinnon, 2009). ICT- and powertrain-related innovations could be explicitly mentioned among the vehicle related innovations that are being implemented.

Global transport policies claim that value lies in intelligent, efficient transport systems with less environmental impact and greater concern for social issues. Policies seldom make up a market, but act as forces or as spirit-of-the-time. Specific regulations such as of Euro VI - emissions from heavy duty vehicles, might influence and make a temporary market (a stabilization of the market) for Euro V vehicles since it make sense for calculative agents. Market innovations are stabilizations of the market (Kjellberg et al., 2015). Another, a more long-term stabilization example, a truck manufacturer's servitized value proposition is value proposition is a new business model in which buyer and seller of trucks co-create value. The business model success is less dependent on its intrinsic qualities than its attractiveness in the eyes of allies. This "model of interessment" explains other's active participation (Akrich, Callon, & Latour, 2002). As the heavy vehicle truck market is transformed towards buying and selling transport services other calculative agents become powerful (Araujo, 2007).

What is stabilized in this market innovation process is competences of buyers and sellers. The buyer specializes in transport operations for its customers and the truck manufacturer specialize in the truck buyers' use of production equipment. The means available for stabilizing truck markets are in economizing values. As long as truck manufacturers extended offerings imply, for example, fuel efficiency the innovation is being implemented. However, there are other valuations that limit the effects of stabilizing efforts.

The Economizing Paradigm

Economizing creates conflicts in relation to powerful actors' work of implementing technical innovations and sustainability (McKinnon, 2009). "Price, price, price" is a mantra in the buying and selling of road transport services. It is leading to a relentless efficiency-seeking improving transport operations and finding synergies but also in adverse negotiations of price. The economic dimension is the most important when it comes to a contract situation even if customers ask for environmental solutions (Lieb & Lieb, 2010; Wolf & Seuring, 2010). "*Customer demands for environmentally adapted transport and logistics is rising, but as soon as the question of costs comes up, transport buyers put environmental criteria in second or third line, if at all.*" (Wolf & Seuring 2010:94). Environmental innovations that lead to cost reduction are seen as beneficial. Economic focus implies that prices are evaluated per transaction rather than identifying the transport service as a value-adding service.

The Sustainability Paradigm

In a survey including 750 purchaser and logistics managers (15.3 per cent response rate) it was found that shippers value ecological and social aspects but the managers avoid competitive disadvantages and need knowledge and information on sustainable action (Large, Kramer, & Hartmann, 2013). Sustainability of road transport services might be difficult to control. The operating network is loosely coupled in short-term contracts and sub-contractors might be unknown to the shipper. Also well-known operators working conditions on the road might be difficult to control.

Guinipero et al.'s Delphi study (sample of 21 high level managers and additional 19 interviews) and literature study state that there are many dimensions of sustainability, and uncertainties related to these hinder efforts. The government regulations are perceived to offer some stable conditions. Based on perceptions of 40 purchasing and supply managers, the sustainability paradigm is here and it is involving them, but drivers of sustainable supply

management will differ across organizations. Drivers are involvement of top management, government regulations, financial benefits, competitive advantage, ISO certification, and customer demand (Giunipero, Hooker, & Denslow, 2012), Factors that hinder firms' efforts to adopt sustainable practices are lack of consensus at the CEO level, costs of sustainability and economic conditions, lack of sustainability standards and regulations, mis-alignment of short-term and long-term strategic goals (Giunipero et al., 2012),

In the economization paradigm, low cost labor is seen as a condition to keep low cost operations. However, professional driving is key in sustainable transport services. For example, safety and security are important both for shippers and the society. Other driver skills that impacts service quality perceptions are of marketing and customer service (Kennedy, 2010).

Research questions

The market is taken for granted by the market actors. In road transport service markets *Price, price, price,* i.e. economization is institutionalized. Other market paradigms that are about for market actors are innovation and sustainability (Figure 1). In the truck market major heavy vehicle manufacturers are pushing for market innovation via service-based business models (Karlsson, 2012). Seen as an institution, a market paradigm "can be built only in specific places where specific materials are available, and at specific times." (Czarniawska, 2009:438). In retrospect, we might be able to identify conditions that favor a shift in norms towards sustainability and innovation in road transport service markets. As is, the market innovation literature proposes that development of new business models in the road transport sector depends on how it is evaluated and adapted to fit with main interests. The evaluation of an innovation depends on market actors' expectations, interests, individual and collective problems, it depends "*on the alliances which it allows for and the interests which it mobilises, no criteria, no algorithm, can ensure success a priori*." (Akrich, Callon, & Latour, 2002:205).

In order to understand how a specific business model in the truck market influences and is influenced by the prevalent road transport market paradigm (cost focus) and what "triggers" their broader acceptance of the business model acceptance, we need to analyze the following questions (Figure 1):

1. How does the business model proposed by the truck provider relate to truck market collective problems (such as low profitability of the truck buyer) and individual problems of the truck buyer in its role as a road transport service provider (such as specialization)?
2. What effects will such changes in the truck market have in terms of change in market structures and norms (innovation, economization and sustainability) in the road transport service market?

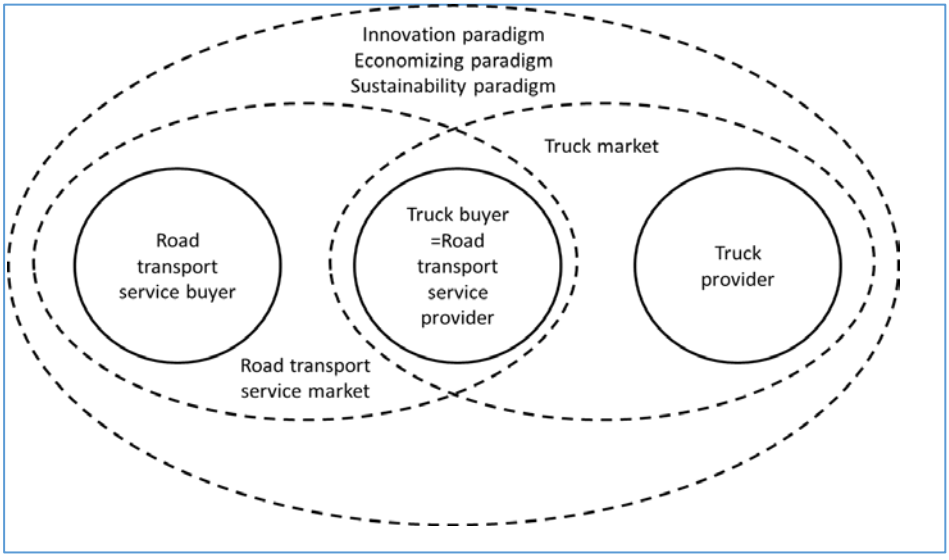

Figure 1 Overlapping markets in road transportation industry

Method

In order to answer the research questions, a qualitative case study was performed. The qualitative case study is seen (along with Barratt et al, 2010) as an empirical research

approach that uses contextually rich data from constrained real-world settings in order to investigate a focused phenomenon, which in our case is the truck manufacturer's business model in the boundaries of surrounding interrelated markets (Doganova & Karnøe, 2015).

The study is a part of a collaborative project between academia and Swedish truck manufacturer (The Manufacturer) which ran 2012-2014. The Manufacturer's business model is in common interest of the project and one of the project's goals is to understand the triggers for accepting it in the diverse market settings. The unit of analysis in this paper is more general phenomenon of business models in the wider downstream network of The Manufacturer including dealers and customers in the diverse markets (Sweden, Poland and China). The approach of this paper is exploratory (in line with Doganova and Eyquem-Renault, 2009) and the data collection for this study was planned as a part of research design (Johnston et al, 1999) as a systematic exploration based on the methodology of reflexive constructionism (in line with Alvesson and Kärreman, 2007). The empirical data was gathered through mostly semi-structured interviews, but also workshops and observations during the workshops. The average interview duration was 50 minutes to 1.5 hours. The workshops usually lasted all day. The interviews and workshop discussions are the major sources of interpretative material. In addition, secondary data is used for contextual understanding, which includes interviewees' official websites, promotional material, reports and protocols.

The next section of this paper comprises of several cases derived from empirical data and observations during the project. By coding interviews and workshop transcripts, the empirical material was subsequently reviewed for understanding of the interrelatedness of what new business models do in the truck market and in developments of the road transport service sector. The interpretative work is supported by theoretical pre-understanding of the phenomenon while not really forcing it in the framework since other emerging elements (e.g. cabotage) were included in the empirical part (Ulkuniemi et al, 2015). With an aim for

rigorous case study the research design was shaped so that it includes the characterization of the unit of analysis, selection of the case vignettes that provides compelling support for our discussions (in line with Johnston et al, 1999). The trustworthiness was increased through the use of interview protocol and triangulation of interviews through usually more than two interviewers and secondary sources of data (Eisenhardt, 1989; Yin, 2009).

Case illustrations

In the following we illustrate with case vignettes how business model developments are proposed and not diffused but rather adapted in market processes which relate to the three paradigms innovation, economizing and sustainability. This gives us an idea of the differential impact of changes that affect the business model in its making of many simultaneous markets. Case 1 and 2 are showing the implementation of business models, whereas case 3 is illustrating emergence or rather emphasis of business models, how cabotage as a response to strong external pressures is crystallizing market forms.

The cases tend to show developments, such as a shift in valuations that favour market paradigm of innovation and sustainability. Also that there is no inevitability about the introduction of a new business model. For example, when economy ends up being emphasized as a consequence of the eco-service bundle more than the eco-aspect shows that the customers do not necessarily interpret a new model the way the manufacturer intended.

Case 1: Truck utilization and availability

In line with developments on various industrial markets, many truck providers aim to progress from being vendors of trucks and services towards becoming providers of transport solutions. In the words of one truck buyer we interviewed: "*We don't actually need your truck at all; we need your transport solution*". The introduction of performance-based offerings is an important part of this development and means providing a customized bundle of physical

products and services that match a particular customer's needs, subsequently charging for how well these needs are met. On the truck market, this typically involves payment models based on utilization (kilometers driven or tons shipped), often with particular emphasis on truck availability or "uptime".

This business model represents a significant challenge to buyers and sellers who must jointly develop a solution based on profound understanding of the customer's business – i.e. how the customer satisfies the needs of its customer – and the functionality of the provider's solution. As the truck provider takes responsibility for some activities previously performed by the transport firm and is paid by how well a truck performs in a setting over which the manufacturer often has little control, such a business models involves shifting a great deal of risk to the manufacturer (who may become responsible for misuse or unpredictable events resulting in downtime). These costs of these risks are estimated and reflected in the price.

Uptime and availability-based truck offerings can, in many ways, transform the transport service market. In addition to shifting fleet management activities to the truck manufacturer, transport service providers may more safely and extensively enter into transport service-level contracts and other innovative business models with their customers. Such agreements tend to be long-term in nature and help transport service providers move away from the highly competitive commodity end of the transport service market.

Many service providers expressed skepticism towards this type of business model, though, arguing that pricing becomes opaque and that the individual haulier can no longer cut corners on service and maintenance costs in times of depressed transport service prices. Some respondents noted that such skepticism may be a generational issue, though, suggesting that younger transport service firm owners be more inclined to adopt business models that generate a great deal of cost predictability while older owners are more reluctant. A respondent from a truck distributor argued that this was a question of professionalism; in his

experience younger, such as more professional haulier owners may be less inclined to enter into extreme low-margin contracts.

We also noted interest of buyers in uptime-based solutions because of their customer's needs made it sensible. In such instances, increasingly predictable transport service business models (e.g. regular routes and schedules) were a driving force. We may thus expect that as some transport service providers engage in business models focused on transport services with a high degree of predictability or segment their customer categories based on types of revenue stream, demand for more cost-predictable truck solutions may increase. This is also indicated by the increasing number of truck manufacturers introducing uptime-based business models in parallel with their other types of truck offerings. We also unearthed a great deal of reluctance among some distributors towards engaging in this type of business model, though, partly justified by the difficulties in accurately estimating the value of the transferred risk and the belief that many customers would be unwilling to pay premiums over more traditional truck purchases.

Uptime and availability-based business models thus involve a shift in value paradigm, from a strong focus on economization to a more innovation-oriented paradigm. We note both push and pull elements to this transformation, i.e. manufacturers' new business models generate demand and help transform the transport service market, and vice-versa as demands for new transport service models increase demand for uptime and availability-based business models. Since economization is strongly rooted in an industry heavily characterized by fierce price competition, we also see strong obstacles to this transformation of the market, which may therefore (at least initially) primarily involve providers of high-end or highly specialized transport services.

Recently, the manufacturer in our study adopted a "vision" of becoming provider of sustainable transport solutions. This indicates a step further than just providing uptime or

availability; a sustainable transport solution requires concern not only for the “economic” bottom line but also for ecological and social issues. This reflects far-reaching requirements regarding environmental and social performance among many higher-end transport service buyers, who expect transport providers to run vehicles that minimize pollution and represent highest current levels of passive and active road safety. This is only possible to achieve with entirely new vehicles, which are also the only types of vehicles offered for uptime and availability solutions. On this part of the market, the shift from the economizing to the innovation paradigm is thus complemented by increasing emphasis on the sustainability paradigm. Changes in truck demand may largely be driven by new business models on the transport service market, such as the provision of triple bottom line transport solutions. This may also be part of a strong polarization between high-end and low-end transport solutions where entirely different value paradigms dominate.

Case 2 Bundled eco-services

The producer for trucks aims to be a one-stop-shop for truck users. In contrast to most of its customers it is taking part in industry-wide projects for higher sustainability. These are basically about ecology and economy. The producer’s technological innovations have placed the physical truck in the premium segment of trucks. Over time the producer has developed services needed by the truck user, such as financial services and workshop services. In line with the one-stop-shopping plans the producer have substantiated a service system as a value proposition of improved environmental performance. It is based on an information system, i.e. the fleet management system in combination with workshop services, truck configuration and driver training and coaching.

The fleet management system will register the location of the truck via GPS, the fuel consumption and the route description of the truck. It gives the trucking firm possibilities to control the truck, its costs and the driver in a new way.

The bundled eco-services is a package promoted by truck producer's head quarter with sales material and training of dealer employees. In a pragmatic view, a Polish sales man says that these bundles are for a small numbers of innovative customers. The majority, however, of truck customers are small actors and close to bankruptcy. The innovative customers have been small and vulnerable but developed by some specific operations or customers. "*This year was good for [truck customer R], he bought 32 trucks"*.

Truck customer R, a Polish transporter says that "*most profitable is to work with customers that trust us, which lead to less problems*". It has taken years to build customer trust in services offered. In order to maintain customer trust in its operations R choose to use the bundled eco-services provided by the dealer. R says that we are a service provider that offers highest service, is ISO certified and have a good reputation, also "*we are selecting orders and work with reliable customers that pay within 30 days*". R has strict control of truck operations in an excel-sheet. "*We have statistics since 2002 of all costs per truck, per operation, per day, cost of fuel, etc. My sons are calculating and keeping control."* He actually suggests that the bundled eco-services should be offered only to truck customers, such as his company, since it increases the profitability through a lower costs of fuel. "*Technically, it implies ½ litre less – you loose 14 minutes but the fuel efficiency covers such loss*". One reason to the fuel efficiency is driver training. Professional drivers are an important resource.

The bundled eco-services is invented by the truck producer. It includes driver training and coaching influencing the behavior of the driver. The package of services lowers emissions and reduces fuel consumption up to 10% according to both the producer's promotion material and trucking firms' experiences. Therefore trucking firms utilizing the service offering get lower CO2 emissions in spite of the fact that few of them have a direct interest in paying extra for environmental issues. Basically, all of them claim that their customers are not willing to pay more for environmentally friendly transports. Buyers of transport operations are price focused

when it comes to negotiations. Therefore, the eco-solution might not be bought primarily on the eco-parameters, but as a way of improving the cost and performance of transport operations. If the bundle of eco-services fit the customers, then it is not always fitting in the sales men world view of doing deals. There seems to be more cultural differences among sales people than among truck buyers at different geographical locations:

> "the new markets develop extremely fast. Very professional dealers. I think they are very early adopting to ideas from Head office. Since we entered into those markets they have grown quick into offer a complete approach towards their customers in selling not only the chassis but the concept of chassis, bodywork, services – you name it. [In other markets], where they are very very conservative in their approach. "We cannot do that because our customers are not prepared to go into that". You will see a huge difference. …[T]he problem is not that big to convince the customer, the problem is bigger to convince our organization." Manager at Head Office

The innovative transport operators, however, through fleet management system, driver training and coaching get lower emissions, lower costs, safer and more secure transportations and working conditions in that the importance and competence of the driver is improved. In this way the bundle of eco-services ties the truck producer and truck users in closer cooperation in which the truck user is facilitated in more sustainable operations.

Most buyers of transport services are working in diverse sustainability projects but not specifically related to transport services. Professional buyers of transports regardless if these are shippers or if these are logistics firms buying transport services on behalf of shippers have little control beyond the price and delivery time. Implementing a bus mode as eco-services is about adaptation among these actors.

Case 3: Changed regulations – Cabotage

The EU Cabotage rules represent a compromise of sorts. In the EU international and national haulier traffic represent two different markets where international hauliers can and are blocked by individual countries from carrying out domestic transport. This leads to protection for national hauliers but also potentially economic and environmental inefficiencies since it forces many international hauliers to carry out empty transports when returning from a delivery. To protect the transport system overall, the EU introduced the Cabotage rules which effectively state that during an international transport a haulier may carry out 3 legs of domestic transports within a week before leaving a country. This can be seen as an interim measure before a potential deregulation.

Cabotage only accounts for approx. 3% of the total transport in a market such as Sweden, but shows an increasing trend. Since almost all international truck transport in Sweden is carried out by foreign EU-based firms, the cabotage market is important.

Empty return flows and over-establishment in the EU leads to a substantial downward pressure on basic transport prices, and a substantial short-sightedness in the industry and some firms speculating in violating the rules (Bentzröd, 2014; SVT, 2013). The claim is that some international hauliers are not keeping to the limit of 3 domestic transports (Stenvall, 2014). This can be called a grey market where it is not exactly clear whether different actors are competing on a level playing field, and regulations on working time and conditions may be violated. Certainly some trucking firms are operating with prices which cannot reflect a reasonable level of truck upkeep, fuel and driver wages (SVT, 2013).

The use of low cost return transport as part of a business is nothing new, however. One small Swedish haulier transports goods from Stockholm to southern Sweden. Since most domestic traffic goes from other parts of the country to Stockholm, this haulier simply subcontracts the main leg of transport from Stockholm, making use of low prices for return traffic. The haulier

then does the local transport in Southern Sweden and makes sure it has the interface with the customer. The owner of the firm states "in my opinion I've specialized towards one customer – I've had this customer for 18 years." For this haulier it clearly is not a threat if the subcontracted return traffic from Stockholm becomes even cheaper due to international competition.

The pressure applied by the cabotage rules and the trends within cabotage actually apply to the market for transport services. However, the impact on the hauliers or providers of these services may be profound and differ depending on the type of actor. Some international transporters with a low cost base sees this as a great opportunity for moving into new markets as part of their overall business. However, although the generic transport market has similar basic requirements in all of Europe, there are a number of specialists that fulfil particular requirements. For example, one Swedish transport company with several divisions noted very different impacts of the cabotage rules. In the commoditized transport competition was becoming fierce and hard to deal with, whereas in the division dealing with moving house the relation to the customer and the ability to speak Swedish is more important than the lowest possible price. The contrast is so marked that the company has considered selling the other divisions to focus exclusively on house moves. This possible splitting of the transport market more markedly into the commodity and a series of specialist segments may be accelerated by market deregulation. The buying behavior of hauliers may likewise be divided between those who only need to meet general EU standards and those with particular investments for specific customers. One haulier states "as soon as you can say that you have an environmental certification that is really great," but this necessarily implies demands on both the trucks and the system around them.

This case shows some of the conflicting forces acting on the different markets. There is a clear economizing and sustainability ambition in terms of improving the fill rate on return

transports, and this will be observed if the regulatory changes have the intended effects. The increased pressure on domestic transporters and new opportunities for international transporters with a low cost base may however lead to changes in their thinking and business models to stay competitive. The aggregate effects of these changes are not clear at this stage. If the size of the grey market becomes too big this can adversely affect the outcome in terms of sustainability. A greater focus on the short term due to an acute situation caused by very low transport prices can force domestic transporters to think differently about their truck purchases, potentially going back to only focusing on the current costs and cutting out long-term maintenance programmes or additional services. This may not create greater efficiency long term. At the same time it seems clear that the domestic transporters must innovate in terms of how well they serve their customers to compete with international firms that first of all have a lower cost base, and secondly have already covered their costs for a trip largely through an international transport. In this sense the cabotage transports are a bonus for the international hauliers.

Case summary

Truck market processes and road transport service market processes are interacting, not only because of exchanges and adaptations in individual transactions but because they influence and are being influenced by institutional values and norms. The EU is an influencing actor that sets regulations and directives to promote innovation, economization and sustainability in the road transport sector.

Table 1 Case summary

	Market processes of case 1, Truck utilization	Market processes of case 2, Bundled eco-services	Market processes of case 3

	and availability		
Truck market	Professionalization Specialization	Differentiation between conservative and innovative cultures Coincidental ecological and socio market improvements Servitization (that includes the physical truck) that lower costs of transport operations	Not directly related to truck market, only involving road transport service providers
Road transport service market	Emergence of specialized solutions such as transport service-level contracts as an alternative to short-term price-driven transport contracts	Emergence of specialized solutions such as transport service-level contracts as an alternative to short-term price-driven transport contracts	Grey market Local/national low cost markets change and adapt Specialization to customer-interaction focused segments
New valuation that shift the *balance involving Innovation Economizing Sustainability*	Among the implementers the focus is on innovation and renewal Polarization between high-end and low-end transport solutions	Monitoring, feedback and new training approaches improve performance in a triple bottom way. Especially emergent economies seem make use of innovative potential offered at the market Polarization between high-end and low-end transport solutions	Improved fill rate and lower costs over time Social impact of grey market actors, especially on drivers due to cost focus Domestic firms either choose to enter the grey market or differentiate on sustainability Some customers become aware of value of sustainability in road transportation

Discussion

What triggers a shift in the market? Our findings suggest that there is not one market but that introduction of a new business model by a truck producer offers possibilities to truck buyers to change its road transport service provider identity in relation to the road transport service buyer. This can enable the eventual transport buyer to reinforce its sustainable profile by buying sustainable transports. The EUs idea of the single market in which efficient transport operations are performed in an innovative industry for the benefit of the industrial network as well as consumers and the safety of citizens promotes different types of market practices and markets. We may mention at least three, the high-end, the low-end and the grey market. Kjellberg and Helgesson (2006) argue that different markets may co-exist or give rise to controversies.

The cabotage market is controversial in the road transport service market (it is not directly involving the truck market). A collective problem in this market is low fill rate on road transport return flows, which not only is an economic problem but also an ecological problem. Historically, return flows are a slack in the system that gives possibilities to better road transport service provider profitability if used. The grey market has attracted international actors with market practices that are evaluated as unsustainable in EU. Indeed the difference between the grey market and the low-cost market seems to be whether core EU regulations are followed. The specialist market seems to be another response where domestic hauliers innovate and try to integrate more with their customers in order to compete with low-cost providers through high performance and customer responsiveness. This can lead to investments in highly specialized vehicles, training and systems.

Case 1, truck utilization and availability as well as case 2, bundled eco-services illustrate polarization between high-end and low-end transport solutions. Transportation is often seen as a commodity in road transport service markets, in which one issue is of how to improve

margins for hauliers. Demands on sustainability have differentiated the available service offers. In this way the sustainability paradigm gives a "timing"-aspect to the innovation paradigm. Truck provider's servitized offer facilitates road transport service providers to professionalize their operations. Drivers are trained and treated as a professional actor, truck utilization is maximised and best available technology is used for environmental concern. Thus, efficiency of the transport system is effected through technology and training. The economic performance is improved partly because of increased efficiency and partly because more profitable contracts are available. High-end transport solutions is evolving but still only a small fragment of the road transport service market.

Low-end transport solutions might be a major share of transportations. We met several who wanted to do traditional activities themselves, like truck buyers doing repair and maintenance. This is not necessarily because they find the offers by truck producer unattractive but because of responsibility for their employees, especially in emerging economies, and also that the offer did not really fit their operations. They needed to serve the trucks quickly and often late in the evening. Or maybe the spare parts were difficult or too expensive to find and they might use cheaper ones. There are lots of different alternatives that exist in parallel.

Who creates these different market forms? The aesthetic values of the trucks are becoming marginalized while professional management is in the forefront and is seen as rational. In the truck market, case 1 and case 2 demonstrate that the truck producer's headquarters with its version of servitization and one-stop shopping, became a prime spokesperson on what is professional management for innovation in the industry (Akrich et al., 2002). This actor has little potential to create interest among buyers in the road transport market. However, innovative cultures (such as the Polish sales man and truck buyer R exemplifies in case 2) made sense of the business model in their creation of a high-end market of road transport services (in line with Callon & Muniesa, 2005; Callon, Millo, & Muniesa, 2007; Doganova &

Eyquem-Renault, 2009). The EU is a macro actor that partly promote valuation of innovation, economization as well as sustainability and partly implement a single market, which strongly influence the road transport service providers. Some of the single market regulations (such as deciding on least possible Euro class and drivers' working time) facilitate truck market innovations while others, such as demonstrated in case 3 give rise to other types of market innovations (see Table 1). Market innovations seldom develop as planned, but are formed in parallel markets.

Concluding discussion

A new business model will not change the road transport market, but may create a new competitive market. We have explained some developments in the road transport market partly by business model implementation (Table 1, case 1 and 2) and partly through timing in an institutional change situation (Table 1, case 3). The business model is a device that can be used in many different ways, e.g. as production equipment utilization and shifts in organizational boundaries and traditional roles and as a ready-made solution that is adopted by innovative actors (in line with Callon, Millo, & Muniesa, 2007; Doganova & Eyquem-Renault, 2009). Theoretical implications are that business models need to be seen in their business networks, in order to understand possibilities and barriers at the market level.

Very few buyers of road transport services can guarantee sustainability related to their road transport activities. The transport industry is complex to control. Overlapping markets in the road transport industry is situated by actors, such as truck providers (involving management, sales and maintenance), road transport service providers (high-end, low-end and grey) and buyers of road transport services. Transactions, exchanges and adaptations are performing the market(s). There will be little sustainability innovation, unless it is valued such as the only possible action or as an economical survivor action.

Also, we contribute to the market innovation process perspective. This paper examines how economically, environmentally and socially valuable transport services have emerged on the path to a single market of the EU and an innovative and sustainable EU transport market. Market innovation literature in which markets are seen as made by actors, devices and ongoing interactions facilitates our analysis of what a new business model actually achieves. The truck producer introduced bundles of eco-services which enhanced especially innovative truck buyers. Many market innovation studies are done in the complex empirical context of financial services while the complexity of our context is of another type, not technologically (computerized transactions) and conceptually (financial terms) but by overlapping markets and heterogeneous interests and type of actors.

References

Akrich, M., Callon, M., & Latour, B. (2002). The key to success in innovation. Part I: The art of interessement. *International Journal of Innovation Management, 6*(2), 187.

Akrich, M., Callon, M., Latour, B., & Monaghan, A. (2002). The key to success in innovation part II: The art of choosing good spokespersons. *International Journal of Innovation Management, 6*(2), 207.

Araujo, L. (2007). Markets, market-making and marketing. *Marketing Theory, 7*(3), 211-226.

Bentzröd, S. B. 2014. Sjåføren av 39,5 tonn bil - nesten uten bremser - prøvde å stikke av. *Aftenposten*, 28 Feb 2014.

Borgström, B., Hertz, S., & Jensen, L.-M. (2014). *Road haulier competition: Implications for supply chain integration*. Paper presented at the The 26th NOFOMA Conference Copenhagen.

Callon, M., Millo, Y., & Muniesa, F. (Eds.). (2007). *Market devices*. Chicester: John Wiley and Sons Ltd.

Czarniawska, B. (2009). Emerging institutions: Pyramids or anthills? *Organization Studies, 30*(4), 423-441.

Doganova, L., & Eyquem-Renault, M. (2009). What do business models do?: Innovation devices in technology entrepreneurship. *Research Policy, 38*(10), 1559-1570.

Doganova, L., & Karnøe, P. (2015). Building markets for clean technologies: Controversies, environmental concerns and economic worth. *Industrial Marketing Management, 44*(0), 22-31.

European Commission. (2011a). Road Freight Transport Vademecum 2010 Report: Market trends and structure of the road haulage sector in the EU in 2010: DG for Mobility and Transport, Unit D.3 – Land transport.

European Commission. (2011b). White Paper: Roadmap to a single european transport area: Towards a competitive and resource efficient transport system: COM(2011)144 final of 28 March 2011.

European Commission. (2012). Innovating for a competitive and resource-efficient transport system: Directorate-General for Mobility and Transport.

European Commission. (2014). Report from the Commission to the European Parliament and the Council on the state of the Union road transport market.

Giunipero, L. C., Hooker, R. E., & Denslow, D. (2012). Purchasing and supply management sustainability: Drivers and barriers. *Journal of Purchasing and Supply Management, 18*(4), 258-269.

High Level Group Report. (2012). Report of the High Level Group on the Development of the EU Road Haulage Market (pp. 1-39): EU Commission.

Hoholm, T., & Olsen, P. I. (2012). The contrary forces of innovation: A conceptual model for studying networked innovation processes. *Industrial Marketing Management, 41*(2), 344-356.

Karlsson, S. (2012). *Combining customized offerings - extended products and the role of business partners.* (Licentiate thesis), Chalmers University of Technology Gothenburg.

Kennedy, J. W. (2010). *Truck driver determinants of service quality as perceived by commercial cargo recipients.* (PhD Thesis Doctoral Dissertation), H. Wayne Huizenga School of Business and Entrepreneurship Nova Southeastern University, Fort Lauderdale-Davie.

Kjellberg, H., Azimont, F., & Reid, E. (2015). Market innovation processes: Balancing stability and change. *Industrial Marketing Management, 44*(0), 4-12.

Kjellberg, H., & Helgesson, C.-F. (2006). Multiple versions of markets: Multiplicity and performativity in market practice. *Industrial Marketing Management, 35*(7), 839-855.

Kjellberg, H., Storbacka, K., Akaka, M., Chandler, J., Finch, J., Lindeman, S., . . . Nenonen, S. (2012). Market futures/future markets: Research directions in the study of markets. *Marketing Theory, 12*(2), 219-223.

Large, R. O., Kramer, N., & Hartmann, R. K. (2013). Procurement of logistics services and sustainable development in Europe: Fields of activity and empirical results. *Journal of Purchasing and Supply Management, 19*(3), 122-133.

Lieb, K. J., & Lieb, R. C. (2010). Environmental sustainability in the third-party logistics (3PL) industry. *International Journal of Physical Distribution & Logistics Management, 40*(7), 524-533.

McKinnon, A. (2009). *Innovation in road freight transport: Achievements and challenges.* Paper presented at the International Transport Forum / IMTT Seminar on 'Innovation in Road Transport: Opportunities for Improving Efficiency', Lisbon.

Sköld, D. (2008). *Bakom den gröna lacken: Den estetiska ekonomins perverterande kärna (Behind the Green Paint: The Perverse Core of The Aesthetic Economy).* (Doctorate Dissertation), Royal Institute of Technology, Stockholm. Retrieved from http://kth.diva-portal.org/smash/record.jsf?pid=diva2:13160&rvn=1

Sköld, D. (2009). An Evil King `Thing', Rising, Falling and Multiplying in Trucker Culture. *Organization, 16*(2), 249-266.

Sornn-Friese, H. (2005). Interfirm linkages and the structure and evolution of the Danish trucking industry. *Transportation Journal, 44*(4), 10-26.

Stenvall, H. 2014. Åkare som fått nog gick ihop. *TransportNet.*

Sundborn, M. (Prod). *Uppdrag Granskning: Transportbranschen,* 2013. SVT.

Wolf, C., & Seuring, S. (2010). Environmental impacts as buying criteria for third party logistical services. *International Journal of Physical Distribution & logistics Management, 40*(1/2), 84-102.