

BUSINESS MODELS GUIDING CO-DEVELOPMENT

Abstract

We examine as a process the relationship between business models and value co-development in a business-to-business setting, with the expectation that business models guide interactions such as cooperation and allow actors to engage in co-development projects. We address the research questions of: (1) How business models guide interaction and adaptation in business-to-business settings; and (2) How business models become established in association with a variety of business units, and as to how such configurations function. Researchers have established that business-to-business settings are characterized typically by interactions among actors, the exchanges of goods, services and rights to use resources, and multiple forms of business organization extending beyond firms to include units within firms, business relationships, nets and networks. These are a volatile mix of elements – conceptually and practically to include cooperative and competitive moments – and at variance with the stability and coping that actors often achieve. Business models can allow for coordination among these elements, for instance if actors identify the models with multiple forms of organization. Furthermore, researchers have presented evidence of actors understanding business models as a kind of organising resource for exchanges, interactions and relationships. We develop our argument by examining through case study research a set of exchanges and durable business relationships associated with a large utility company as it operates in the UK. We find that actors attempt to develop their exchanges into sites of co-development, combining products and services under competitive and cooperative forms of exchange. Business models become established as a form of practice over time with different degrees of clarity and deliberation, with actors drawing upon these to guide their exchanges and interactions.

Keywords: business models, value, co-development, networks, business relationships, marketing system

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INTRODUCTION

Business models are becoming a significant construct and an emergent unit of observation and analysis among researchers and practitioners (Chesbrough & Rosenbloom, 2002; Zott, Amit & Massa, 2011; Mason & Mouzas, 2012; Coombes & Nicholson, 2013). While researchers do not generally identify an organization with its business model, the latter are nevertheless often studied within the boundaries of a single firm. Such a focus and its analytical and practical association between model and firm risks missing a necessary aspect of business models – their need for flexibility and adaptability to tackle the challenges emerging from a network of related companies, to include suppliers, customers, competitors, collaborators and perhaps regulators. Furthermore, we expect that business models will be a focus of interaction and co-development, such as with cooperation, among firms in business-to-business settings involved in emergent and durable business relationships (eg., Gadde, et al., 2002; Håkansson and Ford, 2002; Baraldi, et al., 2012). Recent studies discuss the need for an explanation of how business models develop, beginning with an understanding of the models as complex process in which they are created and operate in multiple settings (Doganova & Equiem-Renault, 2009; Mason & Spring, 2011; Mason & Mouzas, 2012).

Studying business models in business-to-business settings raises the questions of: (1) How business models guide interaction and adaptation in business-to-business settings; and (2) How business models become established in association with a variety of business units, and as to how such configurations function. Business models reflect the ‘content, structure, and governance of transactions designed so as to create value through the exploitation of business opportunities’ (Zott & Amit, 2007, p. 181). The emphasis on ‘transactions’ is of particular importance as these are a form of interaction, and often implicate a relationship in business-to-business settings. The models can be produced and researched in different settings and with multiple styles of business organization, to include firm, business unit within a firm, project group, durable relationship, network, industry and market.

This paper examines business models from the perspectives of a network of actors who forge links, interactions, exchanges and interdependencies organized typically as relationships. A relationship becomes a way of undertaking the co-development of value between the actors through the exchange of resources, expertise, knowledge and experience. This perspective suggests that especially in business-to-business settings the development and operation of business models necessarily implicates other business models associated with other actors in a value network. Value network implies multiple dependencies and exchanges among business units (Peppard & Rylander, 2006), indicating that suppliers, customers and other external partners provide resources, goods and services as represented in a business model. Business models in a network imply overlap, interaction and possibly an alignment of activities and intentions (Mason & Spring, 2011). Overlaps imply or require a degree of flexibility where firms attempt to map and utilize the resources available within business networks in the knowledge that some of these resources are themselves tied in with others’ business models (Strömsten & Waluszewski, 2012). Customer needs are prominent but many relationships are the locations of multiple exchanges (Chesbrough & Rosenbloom, 2002; Mason & Mouzas, 2012). At the very least, we expect that business models are dynamic and adaptable; they develop through the interaction of different social groups within the firm, and outside its boundaries – through the interaction and perhaps cooperation of different stakeholders in an organizational network (Mason & Spring, 2011).

As researchers, we adopted an exploratory case study approach. The paper starts with the overview of business models literature. It is then followed by a discussion of value co-creation and co-development within the multi-actor network. The paper's contribution to business models research is motivated by examining their emergence in a business-to business setting, so allowing us to identify boundaries and the possibility of alignment within the multi-actor system. The particular circumstances of this paper's case lend themselves to a greater articulation and documentation of standards and specifications, of long-lived assets, the importance of operational continuity, and the significant role of a regulator in designing means to replicate what could be seen as feasible competitive outcomes. The business models in this case guide co-development. Through examining the case, we show the importance of tracing a process by which sets of business models can settle down in an overall marketing system.

The paper is organized as follows. We examine existing research to show how others have explained the emergence of business models, as items that actors articulate and deploy in business settings. We then contrast this with a review of research into co-development, noting the common role of resources to business models and co-development. We provide an account of research choices in selecting, development and analyzing the case study of a large utilities company. We then present findings, in which we account for four patterns of types of co-development, presenting a marketing system centering on but in no way reducible to the focal utilities company. In the discussion, we assess the extent to which these patterns of interaction and relationship are guided by business models and locate these business models with business units.

BUSINESS MODELS

Business models are receiving growing attention both in the practitioner and academic research having emerged as a new unit of analysis (Chesbrough & Rosenbloom, 2002; Shafer, Smith & Linder, 2005; Zott, Amit & Massa, 2011). There is evidence that firms can create competitive advantage by devising and mobilizing business models (Mitchell & Coles, 2003), through innovation (Zott, et al., 2011) and through enhanced operational performance (Zott & Amit, 2008).

One of the important characteristics of business models is that they stress 'a system-level, holistic approach to explaining how firms "do business"' (Zott, et al., 2011, p. 1020). To date, research into business models has centered on the firm as the focal business unit but most models are also broader in scope characterizing how companies engage in business activities and work with others (Zott & Amit, 2010; Zott, et al., 2011). The design or articulation of a business model becomes a vital process that shapes a firm's activities and relationships with other stakeholders, many of which we can assume are also designing and articulating business models, possibly with regard to resources developed in common. Similarly, Chesbrough (2012) discusses the notion of 'open business models', stressing their boundary-spanning qualities whereby the focal firm's business activities may be regarded within network of multiple stakeholders. They provide access to shared technologies or common resources knowledge, and other resources and capabilities, or those licensed by external partners (Chesbrough, 2012). Business models are concerned with 'cooperation, partnership, and joint value creation', or the complex 'networked nature of value creation' between multiple stakeholders (Zott, et al., 2011, p. 1031). They are not identified essentially with a specific firm or business unit, but are concerned with value co-development within the net of collaborative actors (Ehret, Kashyap & Wirtz, 2013).

It can be argued, that business models are centered upon the creation and delivery of value for the customers (Chesbrough & Rosenbloom, 2002; Mason & Mouzas, 2012). In fact, in their analysis of the literature Shafer et al. (2005) identify four broad categories of business model components – strategic choices, value creation, value capture and value network. Value network involves co-creation of value through the collaborative relationship between different actors (Peppard & Rylander, 2006) and represents a network of suppliers, customers, external partners that provide additional resources to the firm. The exchange that occurs within the value network reflects a fundamental component of the firm's business model (Shafer, et al., 2005).

We can further see the two underlying themes in the business model research: (1) it has the notion of value creation as a focus; (2) and it is concerned with capturing and appropriation of this value through the focal firm's cooperation with its value network (Chesbrough & Rosenbloom, 2002; Shafer, 2005; Chesbrough, 2007; Zott, et al., 2011). As such, business models become an important and durable way in which firms can mediate between value co-creation. They may be open, voluntary, social or to do with spillovers or externalities, and value co-development, which is specific to a business unit, or a contractual relationship between two or a small number of business actors.

Similarly, within the open innovation literature Chesbrough and Rosenbloom (2002) and Chesbrough (2010) discuss that the key purpose of business models for innovation is to support and enable the delivery of value offered by the technology to the customers. Business models thereby both drive innovation and become a subject of innovation. They can serve as a mediating element between the company's technological capabilities and its market activities (Chesbrough & Rosenbloom, 2002; Zott, et al., 2011).

The role of business models in organizing the value network is further stressed by Zott and Amit (2007, p. 181), who posit that business models reflect 'content, structure, and governance of transactions designed so as to create value through the exploitation of business opportunities'. The emphasis on transactions is important to this paper, as in business-to-business settings we are accustomed to assessing transactions and relational exchanges as distinct and often co-present forms of making and governing exchanges.

Business models can offer direction for managers in representing, organising and relating components of a business or entrepreneurial plan. This involves: (1) Identifying the value proposition provided by a business – perhaps technology – opportunity; (2) Selecting and securing positioning within a market, with the relationship between business units as these form a value network; and (3) Organizing revenue streams into and across a value chain, considered from a focal business unit and in the knowledge that others are also devising their strategies (Chesbrough & Rosenbloom, 2002; Zott, et al., 2011; Mason & Mouzas, 2012).

Mason and Spring (2010) further discuss the three main elements of business models: technology, market offering and network architecture. Chesbrough and Rosenbloom (2002) also stress that it is not enough to create the value proposition - organizations need to be able to capture and appropriate some fraction of the value for the business model to bring economic gains. Again, in a business-to-business setting, the question of appropriating value is complex though still feasible as exchanges are often multiple and embedded in relationships. We expect that part of the impetus of a business model is to stabilize and to some extent alienate an exchange from a business relationship or a complex net of relationships (Callon, 1998; Araujo & Spring, 2006).

Thus, in this paper we regard business model as an artifact or object or resource, which has a public manifestation, but can acquire a durable quality by holding in place a set of other

resources, required for some business activity (Doganova & Equiem-Renault, 2009). As such, we consider that business models can enable the firms to mediate between episodes of planning and review, acquiring and combining resources, establishing market relationships and reputation, and making exchanges with co-developers including end users. Business models provide conceptual advance on perspectives such as the resource-based view, open innovation and service dominant logic through governance by specifying the organizing capabilities required of business units in both holding in place and reviewing a range of connected business activities for creating and capturing value.

In the following section we will discuss value co-creation, turning our attention to the exchanges and interactions between the collaborative partners; and co-development, and the role of business models in organizing the resources and exchanges.

CO-DEVELOPMENT IN THE MULTI-STAKEHOLDER SYSTEM

Broadly, value creation can be recognized as a 'process through which a user becomes better off in some respect' (Grönroos, 2011b). It reflects a shift from a 'market-to' approach to a 'market with' approach where customers have become an active party in the exchange, itself considered as a time-using process rather than a transaction of relatively brief duration (Lusch & Vargo, 2006; Cova & Salle, 2008). Value creation implies that we should entertain the possibility that exchanges are at the heart of co-development and have multiple valuable qualities, which is not perhaps clear if instead we use the term 'transaction'. Active customers or clients participate in value creation, and the roles of those parties involved expand to include the development of resources so that many actors can create value for themselves (Grönroos, 2011a). End-users particularly can be viewed as being relatively empowered as they become involved in the co-creation of value together with companies (Prahalad & Ramaswamy, 2004; Lusch & Vargo, 2006). Cova and Dalli (2009) discuss the 'working consumers' who give significant value to the objects that are to be exchanged, including across cultural, symbolic and economic dimensions. In the business-to-consumer setting the consumer-company interactions change the process of value creation and appropriation moving it from being strictly within the firm to outside of its boundaries (Prahalad & Ramaswamy, 2004).

In a business-to-business setting researchers have discussed joint processes of developing the offering through the resources that can become shared, expertise and innovation, or co-design among the partners within a value network (Lusch & Vargo, 2006; Chen, Tsou & Ching, 2011). Research discusses the key role of co-development in creating a competitive advantage through customer and supplier integration and participation in value creation (Fliess & Becker, 2005; Pires, Dean & Rehman, 2014). Resources are the common connection between business models, co-creation and co-development. It is worth briefly revisiting Penrose's (1959) discussion of resources, in which she argues that for growing firms, resources are so as they become associated with or connected to entrepreneurial or business growth plans, offering productive services. Growth itself has the potential of releasing further resources, for instances through organizational learning and routinizing, contingent upon the creative planning by managers and entrepreneurs. In other words there exists uncertainty, subjectivity and malleability about resources as they are influenced strongly by plans. Where Vargo and Lusch (2004, 2011) make a very clear distinction between operand (knowledge-based and active) and operand (inscribed and passive) resources, business models have the potential of drawing a dualism from this apparent duality. Business models are both: a template inscribed with categories and directed in agency. We argue below

that resources resist stability and completeness having their own material (physical) or socio-material (durable, procedural or routine) agency requiring active and imaginative combination and assembly and exhibiting interaction in specific activities or projects (Orlikowski & Yates, 2002). Flies and Becker (2005) further add that it can be difficult to control or manage the co-development processes between the customer and supplier, and we will argue later that business models may serve as a mechanism to structure these exchanges.

Recent literature further stresses business model flexibility as an important prerequisite of innovation; it allows the value network to effectively identify and respond to market requirements (Amit & Zott, 2001; Mason & Mouzas, 2012). Similarly, Gunasekaran, Lai and Edwincheng (2008) introduce the idea of a responsive supply chain, describing the process whereby organizations are focusing on creating agile supply chains. Here we also see the importance of sound partnership and collaboration between the partners and suppliers within the business network to effectively react to the market and customer requirements.

However Dowling et al. (1996, p. 155) also note existence of ‘multifaceted’ business relationships – for instance when a supplier is also a key competitor. As such, there is also a possibility of observing both cooperative and competitive relationship between the business units, which participate in co-development, but may act in conflict with each other when for instance governed by separate business models. As such, there is a possibility of a stable cooperative relationship to exist, which involves both cooperation when there are common goals or gains to be met; and competition, where there is a conflict of interest, and thus involves some kind of rivalry between the value network actors (Bengtsson & Kock, 2000).

Companies need to establish effective communication with others that they deem to be within their network in order to gain some understanding and negotiate some access to resources held within the network and ultimately provide solutions to customers, who could also be members of the same network (Mason & Mouzas, 2012). This implies that resources, or services derived thereof, are not always easily tradable, given their historical, embedded, subjective and cumulative quality. Companies should allow for greater flexibility of their business networks with regards to the end consumers and the firm’s broader business network (Mason & Mouzas, 2012). For that matter, flexibility could be the inevitable quality of business-to-business activity within a network as actors come to terms with gaining access to one another’s resources and deriving user value from that set of resources. Furthermore, Baraldi and Waluszewski (2005) suggest that resources yield user value and interactivity to the extent that qualities become known through exchanges and projects and in which co-development can be considered in a more radical and interactive understanding. We see a similar argument in science and technology studies, for instance in Pickering’s (1995) explanation of material agency. The business models within a network of stakeholders need to adapt, or become flexible and are possibly able to overlap as they seek to draw out valuable services from potentially productive resources, which can be durable and remain partially known in those models and plans.

Drawing from the recent research on the role of the value network in shaping business models we aim to explore the multiple sites and versions of the business models in such business-to-business relationships and their boundaries. The task of delineating the concept of business models or drawing the boundaries of the business model in terms of the focal organization and its activities can become extremely challenging in the business to business relationships, where companies are often striving to connect their resources and capabilities to achieve greater business performance. We explore this process through looking at the focal firm; and at the

separate relationships within its network. This paper thereby aims to answer the following questions:

(1) How business models guide interaction and adaptation in business-to-business settings; and (2) How business models become established in association with a variety of business units, and as to how such configurations function.

The paper is thereby bringing together academic literature on business models and co-development. Specifically, in this regards, this research draws from the ideas of business model flexibility discussed by Mason and Spring (2011) and Mason and Mouzas (2012) and regard them as possible durable artifacts (Doganova & Equiem-Renault, 2009). We address the process of possible alignment of business models for efficient utilization of business network's resources and capabilities and the process of co-development among multiple actors.

METHODOLOGY

An exploratory case study approach was adopted due to a relatively understudied nature of the business models literature. The chosen approach simultaneously allows flexibility and accuracy and is appropriate when looking into complex relationships and interactions (Yin, 2003; Baxter & Jack, 2008). Case study methodology is adopted when generating or testing theory, or describing various processes and practices (Eisenhardt, 1989; Gibbert, Ruigrok & Wicki, 2008). Stake (1998) asserts that case selection can be due to the nature and uniqueness of the case. The utility firm chosen for the research matches these criteria due to the uniqueness of its internal strategic business units, its interactions with its customer and suppliers.

Current research included both secondary and primary data collection, and was conducted over a period of ten months. The documentation provided by the organization, as well as publicly accessible reports were analyzed. The researchers further conducted eleven interviews and six observations of external partner meetings, industry workshops and seminars (shown in the Table 1). The chosen method allows for data triangulation, where multiple sources of data are combined and analyzed to allow for greater validity (Eisenhardt, 1989; Tellis, 1997; Yin, 2003).

The theoretical validity of the chosen methodology is also supported by the 'prior development of theoretical propositions to guide data collection and analysis' (Yin, 2003, p. 14). Researchers had prepared a semi-structured interview protocol to slightly guide the discussion, but this at the same time allowed flexibility and easiness of the process. The researchers looked into both explicit and implicit views on the explored phenomenon. The main discussion themes were previously identified in the literature and included issues around co-development practices, knowledge sharing, exchange and communication of expertise through engagement in specific collaborative projects. The interviews were audio recorded and transcribed, and were further subjected to thematic analysis to identify the common patterns within the data. The patterns or codes represent the instances of co-development as present across multiple sites and evident through interactions between the key network actors, and their efforts to carve out and develop their separate business models through these exchanges.

This case study uses theoretical rather than statistical sampling and focuses on the instances of co-development within a single context – a public utility corporation – but across multiple units of analysis – among the actors in the value network. This is necessary to allow for the replicability of research, and thereby the cases should not be chosen randomly as in statistical sampling (Eisenhardt, 1989). Our study explores several cases within the case, which allow for greater depth and comparison across these as a basis for analysis (Eisenhardt, 1989; Yin, 2003).

The study further involved multiple investigators and sometimes observations and interviews conducted in teams of researchers, which allowed for additional perspectives and ideas on the subject (Eisenhardt, 1989). The Table 1 below shows the fieldwork log for the data collection.

Table 1. Fieldwork log

Date	Type	Position	Duration (min)
25/02/2014	Observation	Utility Firm and Supplier Alliance	All day
07/04/2014	Interview	Standards & Specifications Manager	59
07/04/2014	Interview	Standards & Specifications Strategist	71
07/04/2014	Interview	Standards & Specifications	55
07/04/2014	Interview	Asset Manager	70
07/04/2014	Interview	Standards & Specifications Planner	55
22/04/2014	Observation & Interview	Standards & Specifications Administrator	60
22/04/2014	Observation	Standards & Specifications documentation demonstration	60
27/04/2014	Meeting - Observation	Utility Infrastructure – 4 participants	90
02/05/2014	Meeting - Observation	Utility Infrastructure Specifications Review	90
27/05/2014	Interview	Head IT Operations	44
27/05/2014	Interview	Asset Manager	52
27/05/2014	Interview	Purchasing Manager	60
27/05/2014	Interview	Capital Investment Delivery Manager	75
06/06/2014	Interview	Knowledge Management Specialist	65
11/ 2014	Observation	Innovation and Service Workshop	All day

We selected respondents and sites for observation in an emergent way. Our focus was with the assets group, and in particular the standards and specifications team. We interviewed the members of this team, all except its leader volunteered to undertake a reviewing role alongside their main job. Members of the team were experienced engineers, regarded as experts and specialists by their peers, and with established reputations in industry associations and conferences as well as within the company. This allowed us an overview of projects and processes. It also provided us with access to other actors in the network, as suppliers, in-house asset projects and operations teams came together to negotiate standards and specifications for a range of sensors, components and subassemblies. We were able to negotiate observation at standards and specifications meetings and observe systems and processes of documenting projects and standards. We are also able to attend public workshops and industry conferences relevant to our research questions. Upon coding our data we revised our theoretical sampling to include four key relationships and exchanges, forming a theoretical sample of cases within the case. Each was a site of co-development, and a candidate to be associated with a business model. In the next section, we present the study's main findings.

FINDINGS FROM THE VALUE CO-PRODUCING NETWORK

CASE DESCRIPTION

The company in question is a public corporation within the United Kingdom utility sector. The case is explored through the lens of the focal company's interactions and exchanges with the key stakeholders within its value network. The identified stakeholders include supplier alliance, asset management team, operations team, and regulator and customer forum. The overview of the value network actors is represented in the Figure 1.

Figure 1. Case Structure – Cooperative business relationships

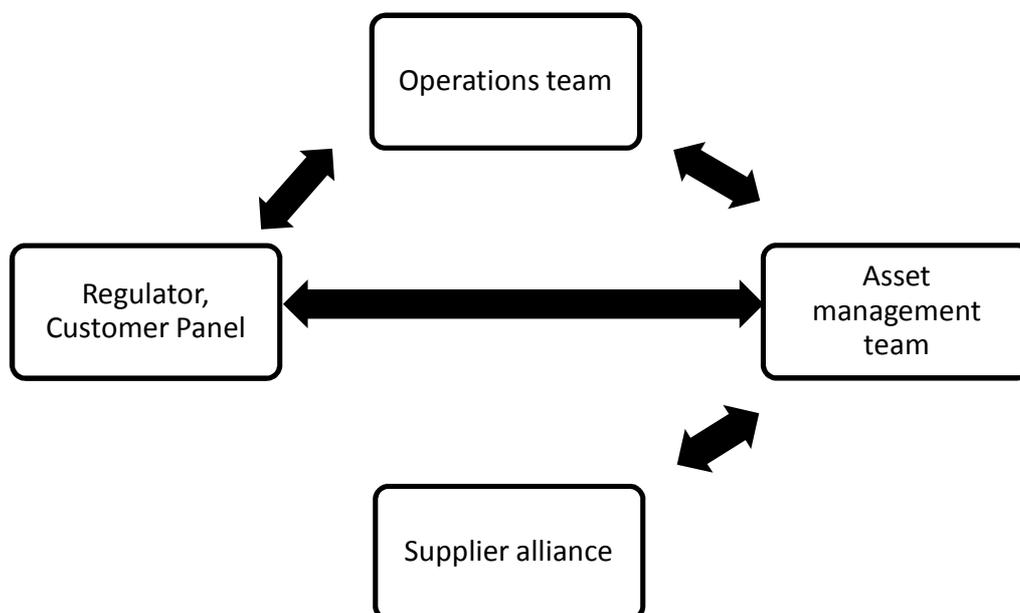


Figure 1 illustrates in a stylized way abstracted from our observed patterns of exchanges and business relationships between the four stakeholders, which are discussed in more detail in the Table 2. The arrows in the structure further show the locations where these exchanges are present, and identified in the interviews and observations as episodes of co-development. The asset management team as one business unit is represented by the standards and specifications group and the procurement group and is responsible for providing investment and equipment for the operations team. The supplier alliance, another business unit, includes designers, consultants, contractors and external partners involved in delivering the capital maintenance programme. The operations team – a further business unit – and the supplier alliance ensure constant maintenance and supervision of the company's infrastructure assets and provision of the quality service to the end customer – the households, as represented by the regulatory customer panel (being a fourth business unit in our case). In this regards the operations team can be viewed as an internal customer to the asset management team, whereas the suppliers are regarded as an external customer. Both the internal and the external customers provide a guarantee to maintain operational efficiency and ensure high standards of service quality to the end customer. The

asset management team is concerned with the firm's economic performance and adherence to the environmental and service quality regulations.

FINDINGS

The key findings from the case study indicate the existence of multiple exchanges between the identified business units with a balance between commercial transactions, internal purchasing and supply, and non-commercial exchanges. Drawing on Figure 1, we see cooperation formed in the co-development as dimension of the interactions among the business units, and in the more competitive part of these interactions especially where these concern the formatting and distribution of benefits across those interactions. These exchanges are examples of varying patterns and episodes of co-development within the value network, which provide benefits to the collaborators in the exchange. Furthermore, various instances of co-development emerge in specific localized clusters within the value net, as indicated in Figure 1. These co-development episodes seem to be held in place by the socio-material factors and practices, each with a particular character and a recognizable and stable process, which had been designed. They organize sets of exchanges and interactions all of which are business-to-business or have direct implications for business-to-business relationships. The identified instances and locations of co-development are summarized in the Table 2.

Table 2. Co-development practices in the value network

	Asset management team	Operations team	Supplier alliance	Regulator / Customer Panel
Asset management team		<p>1 Providing investment to the operations team for the maintenance and servicing of industrial assets.</p> <p>Ensuring that the documentation about their existing assets is of good quality and up-to-date to be accessed by the internal and external customers.</p> <p>Communicating the framework and regulations for the required work.</p>	<p>2 Establishing long-term relationships with alliance partners.</p> <p>Providing designers, consultants with standards & specs.</p> <p>Promoting an alliance among lead suppliers.</p> <p>Including suppliers in standards and specifications meetings alongside operations and asset experts.</p> <p>Reducing the number of waivers to agreed standards and specifications.</p>	<p>3 Customer engagement, CRM initiatives.</p> <p>Consumer prices are kept at certain level over a long period of time.</p> <p>Maintaining the ‘client value system’.</p> <p>Considering the ‘impact of the business on the customer.’</p> <p>Measuring themselves against customer surveys – in terms of customer satisfaction.</p> <p>Customer connections – ensuring that the housing developers are compliant with the specifications.</p>
Operations team	<p>4 Providing the guarantee of high quality service and maintenance.</p> <p>Proactive maintenance of</p>			<p>5 Concerned with delivering high quality service to the end customer.</p> <p>‘Meeting quality starters</p>

	<p>existing assets, and ensuring quick response to any issues emerging.</p> <p>Concerned with keeping costs of maintenance down.</p>			<p>from our regulators' (Respondent 11).</p> <p>Ensuring positive customer experience.</p>
Supplier alliance	<p>6</p> <p>Sharing knowledge, expertise and best practice between the lead corporations.</p> <p>Providing resources, including technical designs and expertise to the focal organization.</p>			
Regulator / Customer Panel	<p>7</p> <p>Providing regulations to the asset management team, setting the standards and frameworks of service delivery.</p> <p>Regulation of consumer price levels.</p> <p>Involvement in the investment decisions.</p>	<p>8</p> <p>Providing feedback to the organization with regards to the quality of the service provision.</p>		

Uniqueness of the industry in which the organization operates shapes the nature of co-development practices. The results of the study show an important role of the asset management team in engaging the supplier alliance through promoting project consortia among lead contractors (as mentioned in the Cell 2 of the Table 2). The asset management team is concerned with building long-term relationships with the key suppliers and hence delivering greater benefits to the end customer. It is further evident that suppliers are actively engaged and included in standards and specifications meetings alongside operations and asset experts, with the alliance being promoted among lead suppliers.

There is a strong focus on implementing and communicating the standards of work to the external partners and to the internal customer – the operations team (Cell 1). The asset management team's priority is to inform their contractors about the existing standards and advise them what the approved materials are. Suppliers participate in co-development projects through providing resources, sharing technical expertise and advising on best practices of cost-efficiency, as illustrated in Table 2's Cell 6. The internal customer ensures operational efficiency and maintaining the cost levels low (Cell 4).

Furthermore, there is a constant understanding and acknowledgement of the fact that this is a planned, accountable and regulated business. A strong feature of the case is reflected in the overall comprehension of stakeholders' responsibility to one another and the end customer. There is a prominence of the end customer as a regulator and co-developer (as shown in Cells 7 and 8). The regulation factor is evident in the programme for modernising and maintaining the assets represented by the five-year investment plan approved by the regulator:

'...the vision is to minimize the customer impact and provide a reliable service so we want to move from being reactive at the moment through proactive to being a predictive organization and replace things before the breakdown...' (Respondent 11)

There is a regular reference to 'the customer' as promoter of high quality service provision and investment plans. The end customer or the households have a unique presence and position in the stakeholder network being represented by the regulator. Almost acting on behalf of the end customers the regulator sets the prices, quality standards and benchmarks, and provides investment. This is also enhanced by a recently founded customer panel, which enables end consumers to engage in co-development with the firm. The customer panel has a unique opportunity to provide feedback about the service quality. It is further involved in the price reviews for the utility services provided by the organization and participates in the future investment decisions:

'We now have a customer group that is made up of actual customers whether they be business customers or private householders and they meet regularly' (Respondent 11).

The regulator is concerned with preserving customers' interests and improving their overall experience through forming conditions and standards for the service provision. Taking a role of customers they would be expecting consistently high levels of service quality and adherence to the standards. Conformity to the framework set by the regulator and its outcomes is monitored through the surveys of customer satisfaction. Hence, the regulation can be seen as an attempt to replicate ideal market outcomes by administrative means.

Finally, there is a strong customer engagement programme (Cell 3), demonstrating enhanced customer satisfaction – both among households and business customers. Given that the industry is regulated, customers play a vital role in the regulation process. This is designed by the regulator to mimic some outcomes that could in principle arise from a competitive market. Instead, the regulator has formed a customer group to work with it in setting price rises over a

regulatory period, setting indicators for the quality of service to be delivered to customers, and by implications establishing the necessary investment programme consistent with price and quality obligations. Two interviewees drew attention to the role of the customer in permitting investment in asset projects, and as researchers we misunderstood this at first to mean only the internal customer of the operations team. Only as we conducted our study further did we uncover the significance of the consumer group and regulator in permitting and so co-developing a programme in terms of price, quality targets and investment programme.

Our findings show four patterns of exchange in which co-development is taking place. While interacting with one another, these are identifiable zones of discretion as part of a network and an overall marketing system in the regulated utility's setting. Hence, the supplier alliance works with a greater intensity with the asset group, the asset group delivers projects for the operations group, and the customer group aligned with the regulator sets pricing and quality standards for the operations group and permit investment programmes for the asset team. Despite the variety of these four kinds of exchange and relationship, we next assess the extent to which these support and are supported by particular configurations of business models.

DISCUSSION

In this section we move from the relationships and episodes of co-development outlined above to the discussion of the business models formed within the value network. The next paragraphs will argue that the business models are formed to guide the co-development and are hence eventually established in association with business units including and also other than the focal firm.

Table 3. Business models and their core elements

	Regulator, customer forum	Operations group	Asset management group	Supplier alliance
Proposition	Articulating & approving price/quality profile for service and investment. Safeguarding public health through monitoring adherence to the set quality standards.	Delivering service to specification, ensuring maintenance and continuity.	Maintaining assets, designing and building new assets, especially in water treatment, achieving energy efficiency.	Components, upgrading within established assets, or as part of overall asset replacing. Advantages in sensing, lower maintenance, productization, saving costs.
Architecture (marketing system)	Becoming formatted as or representing the customers.	In-house maintenance, monitoring, sensing.	Sharing knowledge across organization, working effectively with supply chain,	Alliance agreements.

		Standards for customers and for environmental protection.	undertaking applied research, engaging in scientific, engineering and industry communities.	
		Commissioning investment projects.	Supporting a value network through procurement and supply chain development.	
Revenue/benefits stream (in this industry, price is regulated and agreed, which provides a target of revenue, from which cost savings may be a focus)	Reporting quality of service to regulator, permitting pricing and investment.	Continuity of service, improvements to service, public health and environmental quality.	Enhancing quality of service to be scheduled over a regulator/investment period. Designing in cost savings.	Contributions to standards and specifications meetings, value in productization.

Our understanding of business models is influenced by that of Doganova and Equeim-Renault (2009), so we take the basic headings of the business model canvass and assess the extent to which business actors develop plans that are consistent with such a generic model. We find something like business models being led and interacting, by the four actors of: customer group (supported by the regulator), operations group, assets group, and supplier alliance. Of these, the customer group's model interacts clearly with both operations and assets, and the asset group's model draws in the supplier alliance and to some extent the customer group. To qualify as business models, rather than simply durable and richly interactive business relations, we expect to see some attempts at shaping and documents behaviors with reasons and measures. Hence, we can expect expectations of co-development processes and outcomes to be articulated, so allowing us to qualify these interactions and relationships as something like business models too.

CAN THE BUSINESS MODELS GUIDE INTERACTION AND ADAPTATION IN BUSINESS-TO-BUSINESS SETTINGS?

The case study illustrates a unique situation where the focal organization operates in a highly accountable and regulated environment. The regulator develops frameworks and standards of service provision as a way to guarantee positive market outcomes. This drives the value network actors to develop business models as a mechanism to guide and formalize the co-development practices. This is clear in the context of an overall marketing system or network in which co-development is taking place, with the stakeholders accepting the price as given, and act with an aspiration of quality, efficiency and cost management.

Business actors thus attempt to define, organize and stabilize their activities associated with the patterns of co-development identified in the findings. This is achieved by the actors in shaping their business models, where the business model takes on the qualities of being a resource. The resource is always stable and employed to guide the exchanges. The business models can be further adapted for example through a different configuration of resources, or practices of product co-development with the customers. The models are thereby seen as possibly long-lasting and robust devices, which are established to guide co-development and coordinate the relationships between the actors in the value network (Doganova & Equiem-Renault, 2009).

Previous research discussed the presence of multiple interactions and instances of value co-production between the different actors in the B2B environment involved in generating the value proposition, and the central role of business models in this process (Gadde, et al., 2002; Håkansson & Ford, 2002; Zott, et al., 2011; Baraldi, et al., 2012). This paper further illustrates numerous exchanges of resources between the actors in the value network, which are driven by the need to effectively respond to the specific market requirements. Business models are thereby used to align and consolidate the exchanges establishing them into the identified cites of co-development.

CAN THE BUSINESS MODELS BECOME ESTABLISHED IN ASSOCIATION WITH BUSINESS UNITS OTHER THAN PARTICULAR FIRMS, AND HOW MIGHT ANY SUCH CONFIGURATIONS FUNCTION?

This case further illustrates that business models extend to the broader business network and can be loosely identified in association with the specific business units. As the network actors organize the multiple interactions and exchanges into the patterns of co-development we see the eventual formation of overlapping business models characterized by varying levels of development and planning. Mason and Mouzas (2011) support this by discussing that the alignment of business models of various stakeholders emerges as they interact. In our case this is also seen as an interconnected process, where these interactions and exchanges shape and give form to the business models and the latter being employed to organize, transform and repackage the exchanges. There is evidence that this may be a deliberate process where the actors are aware of it, to the extent where the business model is regarded as a means and a resource used to facilitate co-development.

Through the exchanges and contractual relationships between the value network actors the latter with varying degrees of planning and deliberation attempt to form the boundaries of business models relating them to separate functional areas. Table 3 illustrates four overlapping business models, which can be loosely associated with the identified business units. They pertain to the asset management team, the customer, the operations team, and the supplier alliance, being all associated with co-development practices and exchanges.

Table 3 also shows the three core components of the business models, including value proposition or potential benefits for the value network actors, architecture or marketing system, and sources of revenues. The identified elements serve as key criteria for comparing the business models in terms of their degrees of deliberation and development. Our findings show a slightly more developed customer business model, which is supported and represented by the regulator. There is a well-identified value proposition and benefits delivered through the regulatory supervision, control of investment and price-setting decisions. The importance of the value

proposition as a core element of any business model has been previously stressed (Chesbrough & Rosenbloom, 2002; Morris et al., 2005; Zott et al., 2011).

Unlike the customer model, the three other business models are less prominent and stable. For example, a much less developed and formalized business model pertains to the operations team, which is regarded as an internal customer to the organization. The operations team is concerned with providing high quality service and maintaining cost efficiency. Their value proposition is focused on continuing service provision albeit allowing little flexibility due to the necessary compliance with the set specifications and environmental and health standards.

The case study shows varying degrees of development of business models in association with the four strategic business units. Through the process of organizing the exchanges and resources between the co-developing partners, we expect that the business models will eventually become defined and formalized, durable and capable of being replicated (Doganova & Equiem-Renault, 2009).

Co-development does not need business models and as researchers we are interested in seeing something like business models emerging among actors, with a degree of deliberation, in a business setting than interrogating a case to show how something like a business models is 'there all along'. We appreciate that co-development in business-to-business settings can appear shrouded in mystery, of how those involved manage to persuade themselves and their senior managers to release time and resource for such developmental work. Business models are not contracts for co-development, yet do allow an articulation of mission, resourcing and revenue plan, intended to be durable and, especially in a business-to-business setting, requiring itself co-development and negotiation among partners. In this paper's case, its particular circumstances lend itself to greater articulation and documentation, of long-lived assets, the importance of operational continuity, and the significance role of the regulator in designing means to replicate what could be seen as feasible competitive outcomes. In part these are boundary conditions, but they also show the importance of tracing a process by which sets of business models can settle down in an overall marketing system. Specifically, we identify four interacting business models, not one overall business model.

CONCLUSION

This paper investigates the question of value co-creation within the business-to-business setting, and does so from the perspective of business models, seeing these as durable means by which stakeholders interact with one another. In particular we have added to the evolving discussion of value co-development within the network of key stakeholders who engage in multiple business exchanges, supported by co-developing practices, both of which become the subject of stakeholders' strategic and coordinating concerns. We understand these sets of interactions to be made stable through an awareness of business models, so allowing for each unit to adopt a cooperative approach. The interactions show a common zone of interests and concerns, but no single business model dominates. Rather, business units interact and at the same time are aware of needs to capture, format and verify benefits relevant to their activities. For example, a distribution of benefits is addressed in regulation through setting prices and investment targets. But in asset management and the supplier alliance, pricing decisions allow investment projects to be approved and instigated. Cooperation is manifest in the offer and purchase both of current utility services, and in promised enhanced qualities – up to foreseen or qualified levels – in the future.

The paper identifies the specific challenges that stakeholders encounter and try and resolve in clearly defining and positioning their business models in this process of value co-development due to the numerous interactions and interconnectedness of the network actors. Simultaneously, we notice the efforts of the key stakeholders to manage their multiple exchanges through shaping and carving out separate business models. We find that these exchanges can lead to the alignment and formation of several overlapping business models, but not some overall shared network model.

The main conclusions of the paper are that: First, business models become dynamic, flexible and robust through use. They emerge and are regarded as a force or a specific resource to define and guide the multiple interactions and interfaces between the key network actors, organizing them into the patterns of co-development. Second, business models eventually become established outside of the boundaries of the focal firm becoming loosely associated with strategic business units.

The findings of the paper are limited to a single industry and organization, although focused on several cases within the case, where the identified business units serve as four units of analysis. Future research should examine cases within a different market environment, looking into the possible factors that could lead to the development of separate business models. Future studies could adopt a longitudinal design to explore the process of formation of business models as a means to organize co-development, and their multiple sites within the value network.

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