

Business Models in the Data Economy: A Case Study from the Business Partner Data Domain

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Abstract. Data management seems to experience a renaissance today. One particular trend in the so-called data economy has been the emergence of business models based on the provision of high-quality data. In this context, the paper examines business models of business partner data providers. The paper explores as to how and why these business models differ. Based on a study of six cases, the paper identifies three different business model patterns. A resource-based view is taken to explore the details of these patterns. Furthermore, the paper develops a set of propositions that help understand why the different business models evolved and how they may develop in the future. Finally, the paper discusses the ongoing market transformation process indicating a shift from traditional value chains toward value networks—a change which, if it is sustainable, would seriously threaten the business models of well-established data providers, such as Dun & Bradstreet, for example.

Keywords: Business model, Case study, Data quality, Data resource management, Resource-based view

1 Introduction

Recent society, economic, and technological developments, such as management and exploitation of large data volumes (“big data”), increasing business relevance of consumer data due to the upcoming of social networks, and the growing attention topics like data quality have received lately, seem to have triggered a renaissance of data management in enterprises. Analyst company Gartner has coined the notion of the “data economy” [1] in an attempt to introduce a single term subsuming these trends. The term implies to view data as an intangible good. Research has been examining the transfer of management concepts for physical goods to the domain of intangible goods (such as data) since the 1980s [2], [3]. In parallel, business models have emerged taking up on the idea of selling data of high quality.

Sourcing high-quality business partner data is of high relevance particularly for purchasing as well as for sales and marketing departments of large enterprises [4]. For example, reliable and valid business partner data (such as company names, company identifiers, or subsidiary company information) is a necessary prerequisite for doing cross-divisional spend analysis or for pooling purchasing volumes on a company-

wide level. The demand for high-quality business partner data has fuelled the emergence of corresponding business models. A prominent example is *Dun & Bradstreet (D&B)*.

While business partner data services have received attention in the practitioners' community for quite some time, research has not taken up the issue to a significant extent so far (a notable exception is the work of Madnick et al. [4]). Nobody has come up with a comprehensive analysis of business models in the field of business partner data services to this day. The paper at hand addresses this gap in literature and aims at exploring business models in the business partner data domain. In particular, our research aims at investigating the question as to *how and why business models of business partner data providers differ*.

2 Theoretical Background

2.1 Data as an Economic Good

A clear, unambiguous and widely accepted understanding of the two terms data and information does not exist [5], [6]. One research strand sees information as knowledge exchanged during human communication, whereas another takes an information processing lens according to which pieces of data are the building blocks of information [7]. The aim of the paper is not to take part in that discussion, but to follow one specific definition, which is to view information as data processed [2].

The value of data is determined by its quality [8]. *Data quality* is defined as a context dependent, multidimensional concept [9]. Context dependency means that quality requirements may vary depending on the specific situation data is used in. Multidimensionality refers to the fact that there is no single criterion by which data quality can be fully ascertained. Examples of data quality dimensions are accuracy, availability, consistency, completeness, or timeliness.

2.2 Business Partner Data

Business partner data typically comprises organization data (e.g. company names, addresses, and identifiers, but also industry classification codes), contact data (e.g. telephone numbers and e-mail addresses of companies), and banking information. Madnick et al. [4] have identified three challenges when it comes to managing business partner data in an organization. The first challenge, *identical entity instance identification*, refers to the problem of identifying certain business partners, as in many cases an unambiguous, unique name or identification number is missing, and one and the same business partner is referred to by several synonyms across the organization. The second challenge, *entity aggregation*, relates to the problem of knowing about and identifying the parts and subsidiaries a certain business partner consists of. And the third challenge, *transparency over inter-entity relationships*, gets relevant if, for example, the overall revenue generated with a certain customer needs to be determined, including direct sales but also third-party sales and reselling.

2.3 Business Model Theory

A business model describes how an organization creates value [10], [11]. Business model research typically draws upon three paradigmatic perspectives on business strategy, namely the *industrial organization* perspective [12], the *resource-based view* [13], [14], and the *strategy process perspective* [15], [16]. The industrial organization perspective focuses on external forces that affect the work of managers. Substitute products, customers, suppliers, and competitors have an effect on strategic decisions, such as *differentiation of products* [17]. The resource-based view states that company specific sets of resources determine whether a company is able to achieve above-average performance [13], [14]. According to the resource-based view, characteristics of key resources of companies are *value*, *rareness*, *inimitability*, and *non-substitutability* (*VRIN criteria*) [14]. The *strategy process perspective*, finally, focuses on the managerial function [16].

In the mid-1990s, business models started to receive increasing attention in the scientific community as the first electronic business models emerged [18]. Research that time was mostly descriptive and analytical in nature. In general, when defining the term *business model* many authors referred to a set of concepts representing the underlying meta-model. Each concept can be instantiated differently in a specific business model. Typically these meta-model concepts were then combined with business model frameworks. More recently, the scientific community has started to provide guidance and support for designing business models. Osterwalder and Pigneur, for example, have proposed a handbook for “business model generation” [19].

Hedman and Kalling [20] have proposed a business model framework which is built on the three paradigmatic perspectives outlined above. Their business model framework consists of seven concepts, namely (1) *customers*, (2) *competitors*, (3) *offering*, (4) *activities and organization*, (5) *resources*, and (6) *factor and production inputs*. It also has a longitudinal process component to cover the dynamics of the business model over time, which is referred to as (7) *scope of management*.

3 Research Design

3.1 Overview

The paper aims at investigating business models of the business partner data domain. For this purpose, case study research was chosen as the underlying research method, as this form of research allows examining contemporary phenomena at an early stage of research in their real-world context [21-23]. The course of the research follows the five guiding points proposed by Yin [21], namely (i) research question, (ii) research propositions, (iii) unit of analysis, (iv) logic which links the data to the propositions, and (v) criteria for interpreting the findings.

As outlined in Section 1, the paper aims at investigating the (i) research question as to how and why business models in the business partner data domain differ. The case study explores a phenomenon which is still relatively unaddressed and for which only limited theoretical knowledge exists. Yin [21] concedes that in exploratory cases

sound theoretical (ii) research propositions are hardly available. However, he stipulates to design a conceptual framework that guides the investigation. Section 3.2 describes the conceptual framework used in the paper. A clear definition of the (iii) unit of analysis is important for determining the validity and generalizability of case study results, as it sets the boundaries of the scope of the analysis. In this paper, the unit of analysis is the domain of business models of business partner data providers. The conceptual framework also works as the (iv) logic which links the data to the propositions. In fact, the conceptual framework forms a lens through which the individual cases can be studied and compared. Finally, (v) criteria for interpreting the findings are derived from the theoretical foundations of business model research, particularly by taking a resource-based view. The interpretation of findings results in propositions on design patterns for business models to be used in the business partner data domain.

3.2 Conceptual Framework

The paper's main goal is not to advance business model theory in general, but to use existing business model research as a lens to study observable business models in a particular domain, namely business partner data services. In order to be able to systematically describe and analyze the cases, the paper uses the business model framework proposed by Hedman and Kalling [20] (see Section 2.3) as a conceptual framework. This model was chosen because of two reasons. First, it is the result of a comprehensive analysis of literature on business models. Second, it combines the three paradigmatic perspectives on business strategy. Hence, Hedman and Kalling's business model framework is well suited to explore the research questions addressed in this paper.

3.3 Case Selection

The case study selection process consisted of two steps. The first step used a focus group to determine the most relevant business partner data providers from a practitioners' perspective. In general, focus groups are an adequate research method for examining the level of consensus within a certain community [24]. The focus group got together on February 3, 2011, in Ittingen, Switzerland. Participants were 28 enterprise data managers from large multinational organizations. They were presented an overview of business models of business partner data providers and were then asked (among other things) to identify on a list of 24 well-known data providers the four most relevant players. Criteria in the selection process referred to the conceptual framework and included, for example, the "offering" (availability of consulting services), "resources" (expertise in the domain), and the "scope of management" (global or regional). The participants chose *Avox*, *BvD*, *D&B*, and *InfoGroup OneSource* to be the four most important providers, so these four were selected to be included in the case study. In a second step, the list of four was extended by two more players, who had entered the market only shortly before, namely *Factual* and *Infochimps*. These two providers were chosen following the principle of theoretical replication [22], i.e. predicting contradictory results compared to the four pre-selected cases.

3.4 Data Collection and Analysis

Data was collected from multiple sources. The beginning was made with publicly available information, such as annual reports, information provided on websites, etc. Furthermore, the companies were contacted via e-mail and telephone and were asked for more detailed information on their service offerings. Main contact persons included the head of Business Intelligence & Key Account Management at D&B in Switzerland, a regional sales manager at BvD, and the Chief Operating Officer at Avox.

Data analysis used the conceptual framework presented in Section 3.2 as a theoretical lens to link the data to the different concepts of the business model framework. In the case of Avox, for example, the interview protocols, documents from the public domain (e.g. press releases and website information) as well as internal presentations on the Avox business model were analyzed according to Hedman and Kalling's framework. Section 4 presents the results of the case analysis.

4 Business Models of Business Partner Data Providers

4.1 Business Models of the Case Study Companies

Avox is a provider of business partner data (i.e. names, addresses, chamber of commerce numbers, ownership structures etc.) of legal entities companies do business with. *Avox* is specialized in business partner data relevant for the financial services industry. The data is stored in a central database which is fed by three main sources of data, namely (i) third-party data vendors (such as the Financial Times), (ii) companies providing information about themselves (such as annual reports, chamber of commerce information, or website information), and (iii) customers providing updates. Thus, *Avox* customers do not only receive business partner data, they also contribute to the *Avox* database—typically on a weekly basis. *Avox* offers business partner data via three different services. Basic subsets of business data records are offered for free by wiki-data (i). Access to the *Avox* database for more comprehensive data is granted at a regular fee (ii). Customer specific services are offered at individually agreed prices (iii).

BvD is a provider of business partner data and related software solutions. *BvD*'s service portfolio is threefold. First, there is a database solution which basically offers access to the central database. Second, the company provides so-called “catalysts”—for specific needs of procurement or compliance departments, for example. Third, custom-made consulting services are offered for business partner data integration with customers' enterprise systems, such as SAP or salesforce.com. *BvD*'s core activities comprise processing and combining of data from more than one hundred different sources, linking of this data, and extension of data through ownership and contact information from own research activities. The pricing model is based on both subscription and usage fees and also includes individual arrangements for customer-specific services.

D&B is operating a database of approximately 177 million business entity records from more than 240 countries. *D&B* maintains the nine-digit D-U-N-S number each

organization in the database is assigned with. The D-U-N-S number is used by purchasing, sales, and marketing departments of customers for identifying, organizing, and consolidating information about business partners and for linking data about suppliers, customers, and trading partners. The D&B pricing model includes subscription and usage fees, licensing components, and customer-specific fees for services.

Factual provides open data to developers of web and mobile applications. The service was initially offered for free. After the initialization phase the service is now charged per data set, for example. Optionally, a flat rate can be booked. Large customers pay individually agreed fees. A special aspect of *Factual*'s business model is the fact that these fees depend on different aspects, such as the number of edits and contributions from a customer's "community" to the *Factual* database (i.e. the company grants discounts which increase with the number of edits and contributions), customer-specific requirements for API service levels (such as response times and uptimes for technical support), the volume of page views or active users, the types of data sets accessed, and "unencumbered" data swaps (such as "crosswalking IDs"). Besides business partner data, *Factual* offers a variety of other, continuously growing datasets.

Infochimps provides business partner data that is created both by *Infochimps* itself and by the user community. A small number of data sets are available for free. For all other data sets a fee has to be paid. *Infochimps* charges a commission fee for brokering data sets provided by users. *Infochimps* offers four different pricing models depending on the use of APIs per hour and per month. *Infochimps* does not limit its offering to the business partner data domain, but offers a variety of other data records as well, such as NFL football statistics. One business partner data set is titled "International Business Directoy [sic!]". It contains addresses of 561,161 businesses and can be purchased at a price of USD 200. In case customers cannot find the data required, *Infochimps* offers retrieving on a case-wise basis.

InfoGroup OneSource offers business partner data on 17 million companies and 23 million business executives on a global level. A key business process is enriching data from a variety of different external sources. The *OneSource LiveContent* platform combines data from over 50 data suppliers and thousands of other data sources. The data is delivered over the web, through integration into Customer Relationship Management (CRM) systems, and via information portals. Moreover, *OneSource* delivers data on a "data as a service" basis to salesforce.com users. *OneSource* charges subscription fees starting at EUR 10,000 p.a.

Table 1 uses the conceptual framework introduced above to compare the business models of the six business partner data providers included in the case study.

Table 1. Business Models of the Case Study Companies

	Avox	BvD	D&B	Factual	Infochimps	InfoGroup One Source
Customers	n/a	6,000 clients, 50,000 users.	100,000 from various industries.	n/a	n/a	Several thousands.
Competitors	Interactive Data, SIX Telekurs.	D&B, among others.	BvD, among others.	Similar offering as Infochimps.	Similar offering as Factual.	D&B, among others.
Offering	One million entities, three service types, web services.	85 million companies, data and software support, web services, sales force.	177 million business entities, data and related services, web services, sales force.	Open data platform, API use for free or at a charge.	15,000 data sets, open data platform, four different pricing models, web service.	18 million companies, 20 million executives, data and software, web service.
Activities and organization	Data retrieval, analysis, cleansing and provision	Monitoring of mergers and acquisitions, data analysis and provision.	Data collection and optimization, provision of quality data services.	Data mining, data retrieval, data acquisition from external parties.	Data collection, infrastructure development, hosting, and distribution.	Selection of content providers, data collection, “data blending”, data updates.
Resources	38 analysts to verify and cleanse data, central database	500 employees in 32 offices, central database (ORBIS).	More than 5,000 employees, central database	21 employees, central open data platform.	Less than 50 employees, central data platform.	104 employees.
Factor and production inputs	Third-party vendors, official data sources, customers.	More than 100 different data sources.	Official sources, partnering, contact to companies	Open data community.	Open data community.	50 “world-class” suppliers, 2,500 data sources.
Scope of management	International coverage, co-creation, partnering.	Global coverage, alliances, data, software, consulting.	Global coverage.	Start-up company.	Start-up company.	Global coverage.

4.2 Resource Perspective

Resources play a key role in the development and maintenance of business models. Drawing upon the VRIN criteria, six key resources can be identified to be relevant for the specific business models of business partner data providers (see Table 2).

Table 2. Key Resources for Business Models of Business Partner Data Providers

	Valuable	Rare	Inimitable	Non-substitutable
Labor	Yes	No	No	No
Expertise and Knowledge	Yes	Yes	No	Yes
Database	Yes	Yes	No	Yes
Information Technology and Procedures	Yes	No	No	No
Network Access and Relationships	Yes	Yes	Yes	Yes
Capital	Yes	Yes	No	No

Labor is used primarily to collect and analyze data. D&B, for example, employs thousands of people to retrieve business partner data from chambers of commerce and other public data sources. As no special skills are needed to perform this task, labor is considered an imitable resource. *Expertise and Knowledge* refers to how business partner data is actually used, how business processes for creating and maintaining business partner data are designed, and how typical data quality problems are dealt with in customer organizations. Similar to labor, this expertise and knowledge is imitable, as domain expertise is available both in the practitioners’ and the research community [4]. A *Database* is a resource which is valuable, rare and non-substitutable. The data itself, however, is imitable, in particular because business partner data mainly refers to company names and addresses, subsidiary company information, and the legal form, i.e. data which is available in the public domain. *Information Technology and Procedures*—e.g. an electronic platform through which business partner data is accessible for customers and which offers data aggregation and cleansing procedures—is valuable but does not meet any other VRIN criteria. *Network Access and Relationships* is of particular importance as all cases depend on access to external data sources, such as chambers of commerce (D&B) or customers (Avox). This resource is the only one that meets all four VRIN criteria. Finally, *Capital* is a resource which is valuable and rare, but not inimitable and non-substitutable.

5 Case Analysis

5.1 Business Model Patterns

The analysis of the business models presented in the case study reveals a number of similarities between the cases investigated. The biggest similarity refers to the data providers’ core activities, which mainly consist of retrieving and collecting data, consolidating it, and then providing it to their customers. Moreover, the companies use similar pricing model elements, ranging from subscription and usage fees to customer-specific service fees. However, there are also significant differences that can be observed. One main difference relates to the way the companies examined stand in

relation with other actors from the network they are embedded in. As a result of the analysis, three business model patterns can be identified (see Figure 1).

Pattern I depicts the traditional *buyer-supplier relationship* between data consumers and data providers. A typical instantiation of this pattern can be found at D&B, for example. The flow of data is unidirectional, and so is the flow of money. Pattern II, in contrast, uses *community sourcing* principles and shows bidirectional flows of data [25], [26]. In this pattern, data consumers provide data back to a common platform, and so they become “prosumers” [27]. The more they contribute, the more discounts they get on their fee as data consumers. This mechanism can be found at Avox and Infochimps, for example. Pattern III relies mainly on *crowd sourcing* mechanisms [28]. The data provider collaborates with data providers which are not necessarily data consumers at the same time.

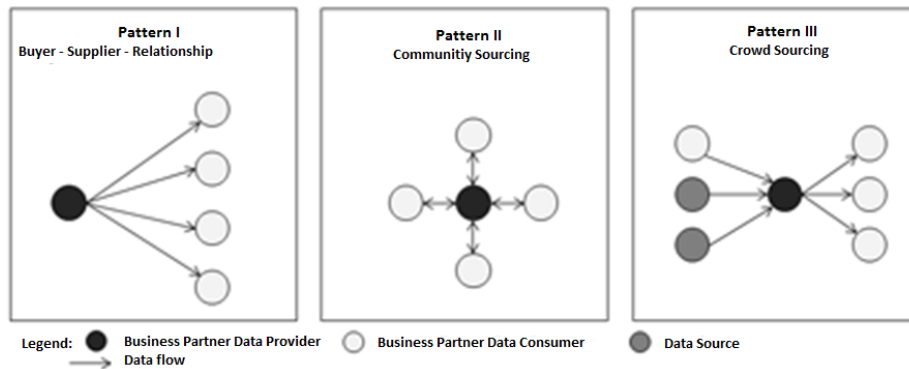


Fig. 1. Business Model Patterns

While all business models of the data providers under investigation rely on the provision of data by third parties to a certain extent, the business models that can be related to Pattern III are completely based on the principles of crowd sourcing. Both community sourcing and crowd sourcing have their roots in innovation management and its goal to include users and customers in the research and development process, and so the terms are often used synonymously. The paper, however, makes a distinction between the two terms by looking at the actual sources. Whereas Pattern II uses data from a clearly defined community, namely customers, Pattern III does not pose any restrictions at all as long as providers of data comply with existing laws and terms and conditions. Moreover, the community sourcing approach is closely related to ensuring and improving the quality of the data in terms of data accuracy and consistency. Crowd sourcing concepts typically are related to data quality only in terms of data availability.

5.2 Resource Allocation Patterns

To further explore the different business model patterns, a resource-based view is taken regarding the companies presented in the case study. The analysis focuses on the differences occurring in the allocation of the six resources introduced in Section 4.2. Figure 2 shows the results of this analysis.

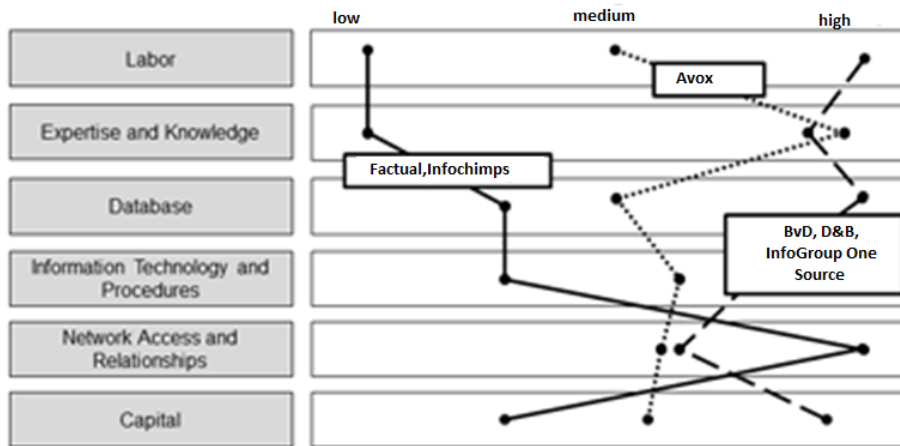


Fig. 2. Resource Allocation in the Case Study Companies

“Traditional” data providers, such as BvD, D&B, and InfoGroup OneSource, are characterized by extensive allocation of resources in terms of *Labor*, *Database*, and *Capital*, but only medium allocation of resources with regard to *Network Access and Relationships* (although D&B, for example, employs about 5,000 people, which is by far more than any other competitor). In contrast, the business models of Factual and Infochimps rely on *Network Access and Relationships* to a major extent, although neither one employs a lot of staff or has sound *Expertise and Knowledge* in the business partner domain. As a consequence, both data providers use crowd sourcing mechanisms to enhance their databases. Avox takes an intermediate position when it comes to allocation of resources. Avox’ strongest resource is *Expertise and Knowledge* regarding a specific domain, namely business partner data for the financial industry.

6 Interpretation of Case Study Findings

6.1 Business Model Framework

Taking a resource-based view helps find explanations why the six business partner data providers under examination use different business models. For example, being a de-facto monopolist, D&B was able to develop adequate resources to acquire and manage business partner data over decades. These resources—i.e. mainly *Labor* and

Database—have allowed D&B to broadly diversify its offering in terms of scope, quality, and price of services. D&B’s ability to differentiate works as an entry barrier for new competitors. Since D&B is able to achieve high allocation of almost all of its key resources new entrants into the business partner data market are forced to find ways of extending their own resource base.

Two approaches of extending one’s resource base can be identified. Pattern II (community sourcing), as used by Avox, for example, represents a rather “conservative” approach, with customers contributing to the service provider’s resources. This approach is appropriate if data providers are able to leverage existing customer relationships in related areas of business (financial industry with a European focus in the case of Avox). A more “radical” extension of the resource base can be observed in business models following Pattern III (crowd sourcing), as used by Factual, for example. As a start-up company, Factual did not have any access to data via internal databases or existing customers, but had to build up their resources from scratch.

The downside for providers of business partner data services following Pattern II and Pattern III is that—although having successfully entered an until then de-facto monopoly market—they are limited in their offerings (data on certain industries only, data from customers only, for example) and the quality of the data they provide (community sourced or crowd sourced data is difficult to manage).

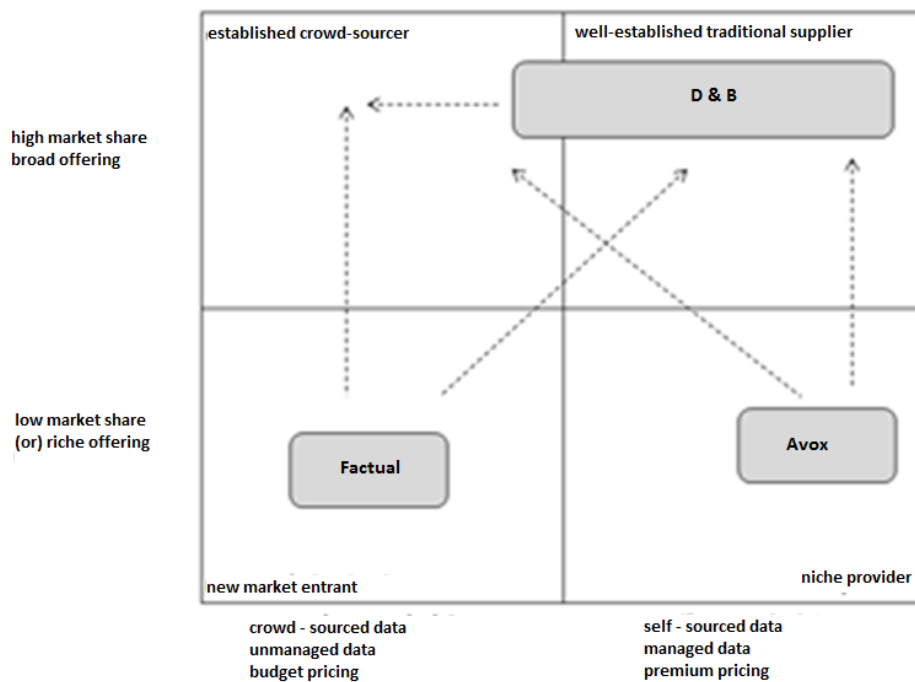


Fig. 3. Business Model Framework for Business Partner Data Providers

Exploring the situation of D&B, Avox, and Factual as typical examples of the Patterns I, II, and III, respectively, the paper proposes a business model framework (Fig-

ure 3) for business partner data providers. The framework comprises five discrete dimensions: *pricing* (premium pricing vs. budget pricing), *quality* (managed data vs. unmanaged data), *sourcing* (self-sourcing vs. crowd sourcing), *market share* (high vs. low), and *offering* (broad vs. niche). As the first three dimensions (pricing/quality/sourcing) correlated, they can be combined to form one single dimension. The same is true for the two other dimensions (market share and offering)—although in a more differentiated sense: While a niche provider—although strong in its niche—has a low overall market share, a low market share does not necessarily point to a niche provider but may also be the result of an early stage of market penetration.

Figure 3 illustrates the current positions of D&B, Avox, and Factual in the framework, which consists of four quadrants: *niche provider*, *new market entrant*, *well-established crowd-sourcer*, and *well-established traditional provider*. The labeling of the quadrants takes into account the dynamics of the market and potential development paths the market participants may follow.

As far as Factual is concerned, the position in the lower left quadrant (*new market entrant*) indicating a low market share and low quality, low cost data is highly unlikely to be sustainable. Therefore the necessary development for Factual should be to increase its market share in order to create new opportunities for more differentiated pricing models and active data management.

Avox, as a *niche provider*, and D&B, as a *well-established traditional provider*, have no immediate need to change their respective business model, which, however, only holds true in a stable environment (i.e. if there are proper niches to occupy and if there is limited competition in the premium segment, respectively). Relying on a single niche may be dangerous for Avox, as specialized knowledge may become generally available or may lose its value in the future. Therefore it may be an option for Avox to leverage its expertise in exploiting one niche segment and increase its market share by addressing further niches or extending its offering to existing customers (by means of mergers and acquisitions, for example).

Moreover, taking a resource-based view shows that there are not many key resources that are valuable, rare, inimitable and non-substitutable at the same time. In fact, *Network Access and Relationships* is the only key resource that meets each of the four criteria. In this regard, the well-established provider (D&B) has a rather weak position as far as the size of its network is concerned. At the same time, Factual, as a new entrant to the market, currently has the largest network *and* may be able to further improve its position regarding its other key resources. If this happened, Factual's business model would become a "game changer", since Factual would be able to offer similar offerings as D&B—managed data, for example—at much lower prices, thanks to its completely different cost structure. This would even affect the basic layout of the business model framework presented above, as the correlation of the framework dimensions would then become unstable. Furthermore, it is questionable whether D&B would be able to imitate this network resource, since that would require significantly different competencies and a different scope of management.

Apart from that, the business partner data domain includes both companies representing the *value chain paradigm* (D&B, for example) and companies representing the *value network paradigm* (Factual, for example) [29]. Value networks leverage

positive network effects [30], i.e. each new member of the network increases the value of the network for all members. A value network may increase value and reduce costs at the same time, and thus create “winner-takes-it-all” situations through a bandwagon effect [29].

6.2 Research Propositions

From the findings of the case study and the conclusions made with the help of the business model framework a set of propositions can be identified (see Table 3). These propositions help understand current business models of business partner data providers and outline their potential future development. Furthermore, the propositions lay the ground for future research to be done.

Table 3. Propositions on Business Models for Business Partner Data Providers

Proposition	Description	Supported by the case of
P1	New market entrants follow a growth strategy.	Factual, Infochimps
P2a	New market entrants choose either a niche strategy focusing on high-quality data (community sourcing) or a general strategy focusing on lower-quality data (crowd sourcing).	Avox, Factual, Infochimps
P2b	Whether a niche strategy or a general strategy is chosen depends on having access to a niche community.	Avox
P3	Only a strong market position allows business partner data providers to differentiate their product portfolios and their pricing models.	BvD, D&B
P4a	A strong market position may be achieved both by focusing on budget priced community data and by focusing on managed high-quality data.	Factual, Infochimps, D&B
P4b	A strong market position may not be achieved by focusing on niche data.	Avox
P5	Community sourcing and even crowd sourcing will be a relevant approach in times of increasing cost competition.	Avox, Factual, Infochimps
P6	If a new market entrant successfully creates significant network effects by turning a value chain industry into a value network industry, this transformation will be irreversible and mandatory to follow for its competitors.	Avox, D&B, Factual, Infochimps

7 Conclusion

The paper addresses two research questions with regard to business models of business partner data providers. First, it explores *how* these business models differ. The case study results imply that business models follow one of three different business model patterns: traditional buyer-supplier relationship, community sourcing, or crowd sourcing. These patterns differ mainly with regard to the instantiation of three busi-

ness model concepts, namely “activities and organization”, “resources”, and “factor and production inputs”. Second, the paper examines *why* business models of business partner data providers differ. Adopting a resource-based view the paper develops a business model framework in which business partner data providers can be positioned. Moreover, the paper identifies a set of propositions that help understand why these different business models evolved and how they may develop in the future.

The paper contributes to the scientific body of knowledge as it is among the first endeavors to address business models in the business partner data domain, which is a topic of high relevance but still scarcely examined in the field of information systems research. Case description and analysis are grounded in theory and lead to a set of propositions.

The paper may also benefit the practitioners’ community. The analysis of the business models together with the business model patterns that have been identified may help business partner data providers reflect their strategy and develop it further. Business partner data consumers may benefit from the findings by gaining a better understanding of the supply side of the market.

Limitations of the paper derive mainly from the nature of case study research as a method of qualitative research. The paper is a first explorative step to deepen the understanding of business models in the business partner data domain. To achieve more theoretical robustness—by elaborating on the causal relationships underlying the propositions and by testing these propositions—further qualitative, but also quantitative research is required. For example, the business model patterns may be triangulated with business models of other data providers.

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References

1. Newman, D.: How to Plan, Participate and Prosper in the Data Economy. Gartner, Stamford, CT (2011)
2. Wang, R.Y.: A Product Perspective on Total Data Quality Management. *Communications of the ACM* 41 58-65 (1998)
3. Goodhue, D.L., Quillard, J.A., Rockart, J.F.: Managing The Data Resource: A Contingency Perspective. *MIS Quarterly* 12, 373-392 (1988)
4. Madnick, S., Wang, R., Zhang, W.: A Framework for Corporate Householding. 7th International Conference on Information Quality, Cambridge, MA , 36-46 (2002)
5. Badenoch, D., Reid, C., Burton, P., Gibb, F., Oppenheim, C.: The value of information. In: Feeney, M., Grieves, M. (eds.): *The value and impact of information*. pp. 9-75. Bowker-Saur, London (1994)
6. Boisot, M., Canals, A.: Data, information and knowledge: have we got it right? *Journal of Evolutionary Economics* 14, 43-67 (2004)

7. Oppenheim, C., Stenson, J., Wilson, R.M.S.: Studies on Information as an Asset I: Definitions. *Journal of Information Science* 29, 159-166 (2003)
8. Even, A., Shankaranarayanan, G.: Utility-driven assessment of data quality. *ACM SIGMIS Database* 38, 75-93 (2007)
9. Wang, R.Y., Strong, D.M.: Beyond Accuracy: What Data Quality Means to Data Consumers. *Journal of Management Information Systems* 12, 5-34 (1996)
10. Timmers, P.: Business models for Electronic Markets. *Electronic Markets* 8, 3-8 (1999)
11. Alt, R., Zimmermann, H.-D.: Business Models. *Electronic Markets* 10, 3-9 (2001)
12. Bain, J.S.: *Industrial organization*. Wiley, New York, NY (1968)
13. Wernerfelt, B.: A Resource Based View of the Firm. *Strategic Management Journal* 5, 171-180 (1984)
14. Barney, J.: Firm Resources and Sustained Competitive Advantage. *Journal of Management* 17, 99-120 (1991)
15. Mintzberg, H.: Patterns in strategy formation. *Management Science* 24, 934-948 (1978)
16. Ginsberg, A.: Minding the Competition: From Mapping to Mastery. *Strategic Management Journal* 15, 153-174 (1994)
17. Porter, M.E.: *Competitive Strategy: Techniques for Analysing industry and Competitors*. The Free Press, New York (1980)
18. Zott, C., Amit, R., Massa, L.: *The Business Model: Theoretical Roots, Recent Developments, and Future Research*. IESE Business School - University of Navarra, Barcelona, Spain (2010)
19. Osterwalder, A., Pigneur, Y.: *Business Model Generation*. Wiley, Hoboken, NJ (2010)
20. Hedman, J., Kalling, T.: The business model concept: theoretical underpinnings and empirical illustrations. *European Journal of Information Systems* 12, 49-59 (2003)
21. Yin, R.K.: *Case study research: design and methods*. Sage Publications, Thousand Oaks, CA (2002)
22. Benbasat, I., Goldstein, D.K., Mead, M.: The Case Research Strategy in Studies of Information Systems. *MIS Quarterly* 11, 369-386 (1987)
23. Eisenhardt, K.M.: Building Theories from Case Study Research. *Academy of Management Review* 14 (1989) 532-550
24. Morgan, D.L., Krueger, R.A.: When to use Focus Groups and why? In: Morgan, D.L. (ed.): *Successful Focus Groups*. Sage, Newbury Park, CA, 3-19 (1993)
25. Linder, J.C., Jarvenpaa, S., Davenport, T.H.: Toward an Innovation Sourcing Strategy. *MIT Sloan Management Review* 44, 43-51 (2003)
26. von Hippel, E.: Innovation by User Communities: Learning from Open-Source Software. *MIT Sloan Management Review* 42, 82-86 (2001)
27. Kotler, P.: The Prosumer Movement: A New Challenge for Marketers. In: Lutz, R.J. (ed.): *Advances in Consumer Research*, Vol. 13. Association for Consumer Research, Provo, UT, 510-513 (1986)
28. Doan, A., Ramakrishnan, R., Halevy, A.Y.: Crowdsourcing Systems on the World-Wide Web. *Communications of ACM* 54, 86-96 (2011)
29. Fjeldstad, Ø.D., Haanæs, K.: Strategy Tradeoffs in the Knowledge and Network Economy. *Business Strategy Review* 12, 1-10 (2001)
30. Katz, M.L., Shapiro, C.: Network Externalities, Competition, and Compatibility. *American Economic Review* 75, 424 (1985)