

# The Role and Emerging Landscape of Data Pools in the Retail and Consumer Goods Industries

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## Abstract

*In terms of electronic collaboration, the value chains of the retail and consumer goods industries can be ranked among the most advanced. Recent studies have underlined the importance of product data alignment between retailers and their suppliers in the implementation of Efficient Consumer Response (ECR). This paper explores the multilateral exchange of product data in the retail supply chain using the Global Data Synchronization Network (GDSN). On the basis of a survey, it analyzes the role of data pools as well as the evolving landscape of B2B intermediaries in this area. It concludes that the Global Data Synchronization Network will lead to an increasing specialization of data pools in either mega pools or local specialists.*

## 1. Introduction

Since the 1980s, retailers and their suppliers have provided a prominent example of intensive electronic collaboration [8, 14]. While the use of RFID may have attracted considerable attention lately, the underlying concept of Efficient Consumer Response (ECR) represents the long-term strategy for closer collaboration. Introduced by [30], ECR encompasses supply-side concepts, i.e. cooperative logistics, for improving procurement and distribution as well as demand-side concepts, i.e. cooperative marketing, which aim at increasing turnover and improving customer service through selective pricing, promotion, and placement policies [9, 39]. A growing number of studies report that poor data quality, in particular outdated or wrong product information, negatively impacts the benefits retailers and their suppliers pursue when implementing tighter forms of collaboration [1, 17, 22]. As a consequence, B2B intermediaries in the retail and consumer goods industries have strengthened their support for the multilateral exchange of product data by offering data pools [34]. In 2004, the Global

Data Synchronization Network (GDSN) was launched with the objective of establishing many-to-many relationships between retailers and their suppliers for sharing product master data. Expectations toward the GDSN initiative are high, given the recent consolidation of master data pools [16, 40] as well as announcements in favor of GDSN from leading retailers such as Wal-Mart, Ahold, Tesco or Metro, and their suppliers Nestlé, Procter & Gamble or Kraft Foods [15, 37].

This paper focuses on the particular role of data pools in facilitating multilateral product data exchange in the retail and consumer goods industries, and addresses the following questions:

- What is the role of data pools as B2B intermediaries between retailers and their suppliers?
- To what extent are data pools adopting the vision of Global Data Synchronization, and how does this impact the global landscape of B2B intermediaries?

An exploratory research design is used in this paper, based on a survey among the leading data pool providers. It can therefore be classified as “Type II: Theory for Explaining” in the typology developed by [20].

The remainder of this paper is structured as follows: Section 2 provides the theoretical anchoring by reviewing the role of intermediaries in B2B relationships and deriving a framework for analysis. Section 3 illustrates the relevance of data synchronization in the retail supply chain, which motivates our research. Based on our framework, section 4 analyzes 10 leading data pools with regard to their organizational structure, customer base, value proposition and service offering. Section 5 concludes with findings related to the future role of data pools and the evolving landscape of B2B intermediaries as well as implications for future research.

## 2. Theoretical anchoring: The role of B2B intermediaries

Different streams of research have been discussing the role of intermediaries in the coordination of value chains. Early e-business research mostly emphasized the emerging electronic marketplaces and their role in online matchmaking between supply and demand [2]. However, of the 1520 marketplaces that were identified in 2000 [12], only a minority survived the subsequent shakeout phase. In the meantime, a more differentiated view on the role of intermediaries in electronic collaboration has developed. Some authors argue that marketplaces in the B2B space are evolving into so-called exchanges or e-hubs which facilitate supply chain collaboration within a vertical industry [6, 12, 27]. These exchanges are often operated by industry consortia, with Supply On in the automotive industry or Elemica (founded by Chemical companies) ranking among the more successful examples. Their main contribution is to reduce the transaction costs [6, 35], most notably the coordination and interaction costs, rather than to improve matching between buyers and sellers. Other au-

thors observe the emergence of so-called infomediaries or cybermediaries [4, 41, 42], like Autobuytel or Expedia, which reduce search costs and information asymmetries for online consumers. Their specific role consists in collecting and distributing product and price information and may include facilitation of purchasing transactions. Since the concept of infomedia-tion has also been applied to the B2B space with a very broad view of information-based services [36], the borderline between the different concepts is blurred.

Table 1 summarizes the characteristics and roles played by online intermediaries according to prior research and will serve as a basis for analyzing data pools: It builds on the taxonomy developed by [3] who distinguish informational, transactional, logistical, assurance and customization functions, but explicitly includes a matching role [2, 27] and additional collaboration, integration and standardization roles. This corresponds to the views of prior research on B2B exchanges, which considers “eHubs as shared and heterogeneous IT infrastructures that act as intermediaries underpinning inter-firm relationships and embedding a set of business rules defined by the IS industry standard” [7]. Table 1

**Table 1. Role and characteristics of online intermediaries**

Role and characteristics		Electronic market [2]	Exchange / e-Hub [7, 27]	Infomediary [4, 41, 42]
<b>Organizational Setup</b>				
Ownership	<ul style="list-style-type: none"> <li>Market participant</li> <li>Industry consortium</li> <li>Third party</li> </ul>	○ ● ●	● ● ○	○ ● ●
Accessibility	<ul style="list-style-type: none"> <li>Public / open</li> <li>Private / closed</li> </ul>	● ○	● ●	● ○
<b>Value Proposition / Services</b>				
Informational	<ul style="list-style-type: none"> <li>Collection and distribution of information</li> <li>Search and evaluation</li> </ul>	● ●	○ ○	● ●
Customization	<ul style="list-style-type: none"> <li>Tailoring of products and services</li> </ul>	●	○	●
Matching	<ul style="list-style-type: none"> <li>Matching buyers and sellers</li> <li>Price determination</li> </ul>	● ●	○ ○	● ○
Transactions	<ul style="list-style-type: none"> <li>Settlement of transactions</li> </ul>	●	○	○
Assurance	<ul style="list-style-type: none"> <li>Transaction securitization</li> <li>Insurance and liquidity</li> </ul>	○ ○	○ ○	○ ○
Logistical	<ul style="list-style-type: none"> <li>Product distribution services</li> </ul>	○	●	○
Collaboration	<ul style="list-style-type: none"> <li>Collaborative business processes</li> </ul>	○	●	○
Integration	<ul style="list-style-type: none"> <li>Electronic connectivity</li> </ul>	●	●	●
Standardization	<ul style="list-style-type: none"> <li>Pragmatics / processes</li> <li>Message semantics and syntax</li> <li>Transport / communication</li> </ul>	○ ○ ○	○ ○ ○	○ ○ ○
<b>Revenue Model</b>				
	<ul style="list-style-type: none"> <li>Fixed membership fees</li> <li>Transaction-based fees</li> </ul>	○ ●	● ●	○ ●
<b>Legend:</b> ● key feature; ○ optional feature ; ○ no feature				

visualizes the differences between the original concept of electronic marketplaces, the more collaboration-focused B2B exchanges and the cyber- or infomediaries.

From the literature, there is evidence that only a limited number of 2 or 3 intermediaries per industry will survive [12, 21]. According to [2, 4], the rationale for the difficulties of online intermediaries in attracting critical mass and establishing a sustainable value proposition is as follows: (1) Since intermediaries establish relationships between different parties, the benefits increases as more organizations join the system (network externalities); (2) the setup requires large capital investments and offers substantial economies of scale; (3) online intermediaries are associated with high switching costs and (4) uncertainty for participants when joining.

The retail and consumer goods industries have already seen a significant consolidation of B2B intermediaries since 2000 when four major exchanges were founded by industry consortia [11]. Originally, the *Worldwide Retail Exchange* (WWRE) and *Global Net Exchange* (GNX) were financed by large retailers including Carrefour, Ahold and Tesco, whereas *Transora* and *CPGmarket* were supplier-oriented and founded by leading manufacturers such as Nestlé, Procter & Gamble and Unilever. These four were to provide a relatively similar service portfolio related to supply chain management, procurement and catalog management services. After the rapid startup in 2000, the subsequent shakeout phase led to the acquisition of CPGmarket by the IT specialist Accenture [33], and the mergers of WWRE and GNX (under the name of *Agentrics* [16]), as well as Transora and UCCnet (in the newly founded company *ISync* [40]).

### 3. Global Data Synchronization as a prerequisite for ECR collaboration

According to ECR, the supply and demand chain relies on electronic communication of transactional data such as forecasts, orders, shipping notifications or invoices. In order to interpret the exchanged data correctly, the different actors need to align additional contextual information, in particular product and business partner master data [31, 44]. An electronic order message, for instance, contains at least a trading partner identification number and identification of the product to be delivered as well as the amount ordered and the accepted price. Manufacturer and retailer are only able to process the

order message correctly if they maintain consistent partner and product information as master data in their information systems. As an example, master data inconsistencies occur if a manufacturer discontinues a certain product variant or changes the package size without disseminating the change to all trading partners.

Data synchronization or data alignment denotes the timely updating of master data to maintain data consistency between the business partners [5, 31, 34, 44]. Recent studies have underlined the importance of data synchronization in the context of ECR implementation [1, 17, 22]. They report significant direct labor costs due to the existing manual data transfer and its administrative processing as well as indirect effects of poor data quality on the supply and demand chain. [22] estimate that retailers may save between 5,000 and 10,000 hours per year in merchandising and data entry time dealing with new item introductions and updates. The same study reveals further savings of 1,000 to 2,000 hours per year in invoice verification and warehouse operations by eliminating data discrepancies. Moreover, efficient data alignment indirectly impacts revenue, given the fact that retailers and manufacturers are able to speed up their time-to-shelf in product introduction processes by 23% and 67% respectively [1], ultimately resulting in an increase in sales. According to [10], data problems constitute one of the main root causes of out-of-stock situations in retail stores, leading to a decrease in revenue. As a consequence, industry initiatives have addressed the field of data synchronization under the umbrella of ECR Europe [26], the Global Commerce Initiative (GCI) and GS1. Major outcomes of these initiatives are a set of standards [34] for the identification, description and classification of master data objects as well as message standards for electronic communication. The latter are available as master data message types in the EDI-FACT subset EANCOM [29] or as platform-independent XML-based extensions of the EANCOM standard [24].

In practice, the bilateral exchange of master data based on message standards has proven to be costly and complex to realize with a larger number of business partners. This is underpinned by the fact that transactional messages such as ORDER (purchase order) and INVRPT (inventory report) are the most regularly used EDI messages in the European retail industry, whereas the master data message PRICAT (price / sales catalogue) is mostly run in pilot projects [26]. As a consequence, data pools which reduce

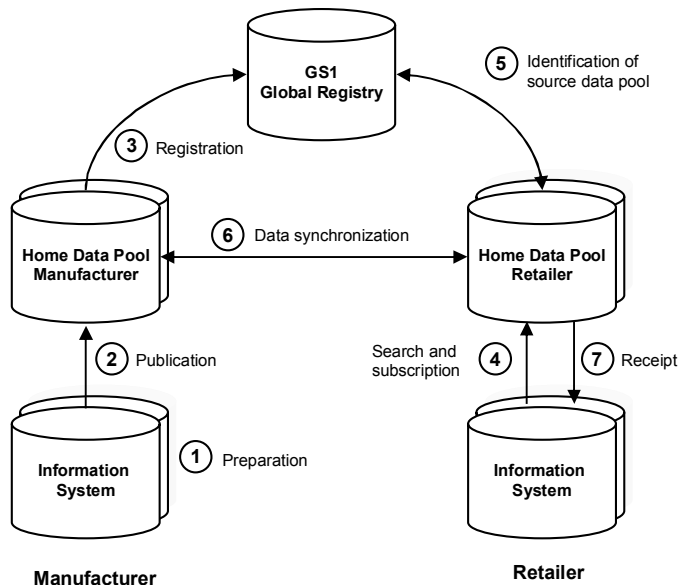


Figure 1. Global Data Synchronization Network (GDSN)

the number of bilateral interfaces and allow for many-to-many relationships have been promoted. The data pool assumes the role of an intermediary which collects and redistributes master data between retailers and manufacturers. By offering multiple interfacing technologies (e.g. EDI using PRICAT, XML or web interface), it eases integration and reduces entry barriers to electronic data synchronization. Since the number of data pools exceeds 20 exchanges worldwide, network effects come into play, and data pools face startup problems.

The Global Data Synchronization Network (GDSN) is targeted at establishing interoperability and federation between data pools [5, 34]: When master data is published in a GDSN-compliant data pool, it can be accessed from all other certified data pools based on the GS1 Global Registry, which acts as a global directory for the registration of items and parties (cf. Figure 1). The GDSN federates data pools via the Global Registry and ensures interoperability by defining standards and protocols for pool-to-pool synchronization. Given these developments, it is still open to what extent the concept of GDSN will change the role of the existing data pools.

## 4. Data pools as B2B intermediaries

### 4.1. Data collection

In order to explore the state of GDSN adoption, we have conducted a survey among data pool providers in the retail and consumer goods

industries. 10 out of the 22 certified data pools which are listed by GS1 participated in the survey, representing roughly 98% of all products registered in the GS1 Global Registry [23, 25] (c.f. Figure 2). The majority of them are based in Europe (6) followed by North (3) and South America (1). Data collection was performed in the form of telephone interviews based on a semi-structured questionnaire. The interviewees were either CEOs (4), area managers (4) or product managers for data synchronization (2). The interview guideline covered general company characteristics as well as detailed questions covering the provider's service portfolio, technology platform and revenue model. The interviews were transcribed and reviewed by the data pool providers, thus ensuring

completeness and correctness of the answers obtained. Data analysis included a comparison of the data pool services with the characteristics and roles played by online intermediaries (Table 1). It demonstrated that data pools concentrate on a very specific set of informational, integration and standardization services which we will focus on in the following sections. Appendix A presents a more detailed overview of the sample.

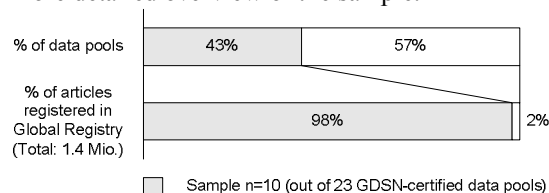


Figure 2. Response rate

### 4.2. Organizational setup

According to the framework introduced in section 3, the vast majority of data pools surveyed are led by industry consortia, thus underlining their role as exchanges for retail and consumer goods companies. Of the data pools which are represented in the survey, A has by far the largest number of customers with an emphasis on North America (cf. Figure 3). While consumer goods manufacturers dominate in most other data pools, A has an exceptionally high percentage of retail customers with on average approximately 4 suppliers per retailer. The next pools are B and D which have a regional scope, and serve 2200 and 1200 customers respectively.

With a significantly lower customer base, C is the only data pool that operates on three continents. The remaining data pools provide services in only one country or a small number of neighboring countries and attract a significantly smaller customer base.

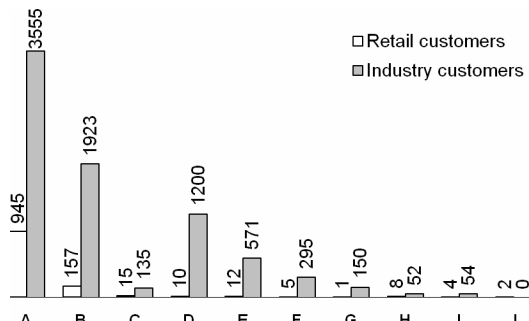


Figure 3. Number of customers

### 4.3. Informational services

It is obvious that the core service offered by the data pools are informational services related to the collection and dissemination of product master data. The scope and focus of the informational services provided by a data pool can be described by the type and number of master data objects as well as their customization to geographic, industry or company specificities. According to our survey, differences exist between the data pools with regard to the data models and attributes supported as well as their possible customization. All pools support the approximately 200 standardized GDSN core attributes, and provide additional sector- or country-specific extensions. The overall number of product attributes managed by a pool exceeds 1000 in some cases, although the survey revealed that an average customer only uses approximately 30-50 attributes. These are mainly basic data such as identification and classification attributes, and logistics data such as dimensions. Figure 4 illustrates the sector affiliation of the customer base and thus indicates the focus sectors of the different pools. Most data pools restrict their informational services to the fast-moving consumer goods (FMCG) sector, including food and non-food products. Only data pools A to D show a significant diversification to other sectors, namely apparel & sports, consumer electronics and hardware, whereas data pool I concentrates on office supplies. Seven data pools in the sample complement their product data services with additional business partner data such as contact or location information (cf. Figure 5). In addition, the support for the exchange of prices and

sales conditions is steadily growing. While five interviewees already provide this service, in some cases still using proprietary technology, other data pool providers are currently implementing price synchronization and will pursue certification in the near future. In addition to structured product, party and price information, four data pools offer services for the exchange of semi-structured data. The current emphasis is on product images in different resolutions and safety sheets for dangerous goods.

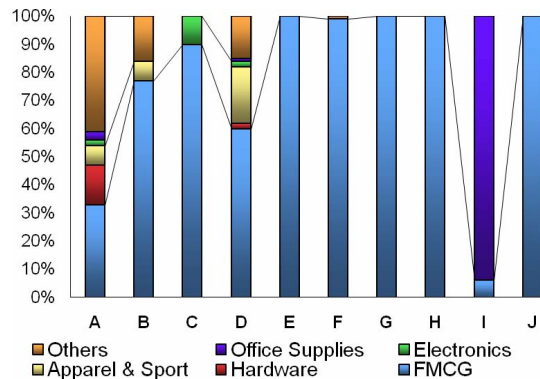


Figure 4. Sector distribution of customers

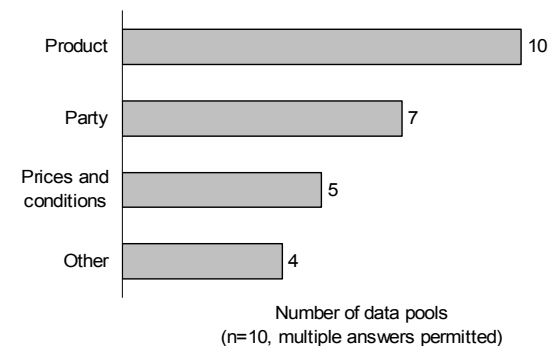


Figure 5. Support of master data objects

### 4.4. Integration services

As outlined in the analytical framework, the primary scope of the integration services provided by data pools is to electronically connect multiple customers with their suppliers. In this regard, the value of using a data pool is determined by its reach (e.g. the number of market participants) and the level of electronic integration (e.g. machine-to-machine integration and human-machine integration).

With Global Data Synchronization, the reach is not limited to the direct customers of a pool, but can be extended by federation to customers of connected pools. Participation in the GDSN thereby enhances the value of the integration service for the data pool customer base. Our survey

reveals significant differences in the ability to provide pool-to-pool connectivity via the GDSN: Whereas data pool A has established linkages to 13 other data pools, none of the remaining pools has established more than 4 linkages. Two pools are yet to adopt the GDSN.

With regard to the level of electronic integration, human-machine-interaction still dominates: Most interviewees reported that the majority of customers transfer master data via the portal interface, leading to manual data re-entry. The low level of automation indicates that the majority of retail and industry companies are still struggling to integrate the external data synchronization interfaces with their product information systems.

#### 4.5. Standardization

By implementing functionality and data exchange for multilateral connections, B2B intermediaries define de facto standards for the relevant levels of inter-organizational agreement, [32, 38], i.e. pragmatics, semantics, syntax, communication and transport. All data pools surveyed passed the GDSN certification and thereby proved to support the defined message choreography for global data synchronization. They build on the semantics defined by the core data model from the GS1 Global Data Dictionary (GDD). Specifically, they all agree on the mandatory standards for identification (GTIN, GLN) and classification (GPC) of master data objects. On top of these data standards, content extensions are realized for certain sectors or countries. In addition to attributes which are specific to distinct product groups, a common extension relates to local product classifications. With regard to message structure, XML is the commonly used syntactical representation form. Furthermore, EDI EANCOM messages such as PRICAT still play a major role when connecting to retailers. In order to ease customer connections, the majority of data pool providers also support less standardized message representations such as spreadsheets or structured text.

The communication and transport level defines the way messages are transmitted between sender and receiver. The survey indicates that internet protocols dominate. All the pools surveyed use EDIINT AS2 for the automated transmission of EDI or XML messages via the internet and provide a portal frontend via HTTP. Some interviewees support additional internet protocols such as SMTP and FTP or message transmissions over value-added networks using X.400.

#### 4.6. Supplementary services

There are three directions in which data pools complement their core services with additional value-added services: (1) data quality services, (2) educational and training services, and (3) onboarding of business partners.

Data quality services aim at enhancing the quality of information that is exchanged via the data pool. All data pool providers implemented validation rules that automatically detect syntactical errors and perform simple checks of data types, domain ranges, or dimension and product hierarchy consistency. In order to guarantee correct data, some data pools additionally offer measurement services: Pool employees physically check product samples (e.g. for barcodes or dimensions) or conduct on-site inspections in order to test whether the product information is correct. A minority of data pools also check data quality from the customer perspective: They offer an analysis of data quality issues at the retailers' systems and subsequently try to resolve the issues and root causes in collaboration with the data suppliers.

Alongside training in the use of data pool interfaces and applications, educational services are offered by the majority of interviewees. This includes training courses on the application of standards used by the data pools. Onboarding services support customers who are realizing data pool connections. These consist of consulting and technical implementation services. The majority of pools provide these services themselves or in cooperation with partners.

#### 4.7. Revenue model

Most of the data pools surveyed charge their customers an annual fee depending on their annual revenue. This annual fee is in some cases accompanied by a one-time setup fee. Two pools offer an exclusively item-based price model, i.e. they charge variable fees, which depend on the number of data objects managed. Typically, the fee per item is based on a diminishing scale. Other data pool providers implement multi-dimensional price schemes. They combine the revenue-based with the item-based model, for instance, or include other factors such as the number of transactions, the number of business partners or the level of electronic integration (portal vs. direct connection) used.

## 5. Conclusions

### 5.1. The role of data pools

With regard to the role of data pools, our survey supports the view of intermediaries as providing an integration or collaboration infrastructure within an industry. This is underlined by the fact that most data pool providers focus on the dissemination of structured product data and are very closely aligned with the industry-wide standardization initiatives by GS1. Interestingly, the value proposition of data pools still remains very narrowly focused on the dissemination of product master data, with only a few expanding their business to more sophisticated product data related services. Based on the planned extensions of the informational services (to additional product information, e.g. pricing or product images, or business partner information) there is, however, some evidence that data pools will form the core of a more comprehensive product data exchange infrastructure in the future.

From a transaction theory perspective, data pools are expected to lower the coordination costs, but also to enhance transaction efficiency. In this context, it is interesting to note that most companies have not (yet) established backend integration with data pools, but tend instead to use human-machine frontends (e.g. portals) for entering and collecting product data. This rather limited level of electronic integration is error-prone and restricts the immediate propagation of changes throughout the entire value chain, which is considered a major advantage of Global

Data Synchronization.

### 5.2. The emerging landscape of data pools

**Mega pools vs. local specialists.** From the survey results we deduce a segmentation of the existing data pools into either “mega pools” or “local specialists” (cf. Figure 6). Mega pools are actively present in multiple continents and countries. They have diversified their services in multiple sectors and product groups and have – with exception of pool C – succeeded in acquiring a comparatively high number of customers. Local specialists service only a geographically bounded area. They focus on one country or a region of adjacent countries, consequently reaching a lower number of customers. In addition, they tend to focus on one sector or product group.

**Pool-to-pool connectivity.** The GDSN aims at solving the start up problems and issues of “excess inertia” which are typical of e-business scenarios in which positive network externalities prevail [19, 28, 43]. Analysis of the data pools indicates that adoption of the GDSN has started. Although in principle all data pools in the sample provide the ability to exchange data with each other, the survey shows a distinct pattern in the emerging active connections, which strongly supports the introduced data pool segmentation (cf. figure 7). The mega pools A, B, and C have distinctively more connections to other data pools than the rest of the sample. They constitute the center of the emerging GDSN network: Almost all local data pools have implemented a master data exchange with them or are planning

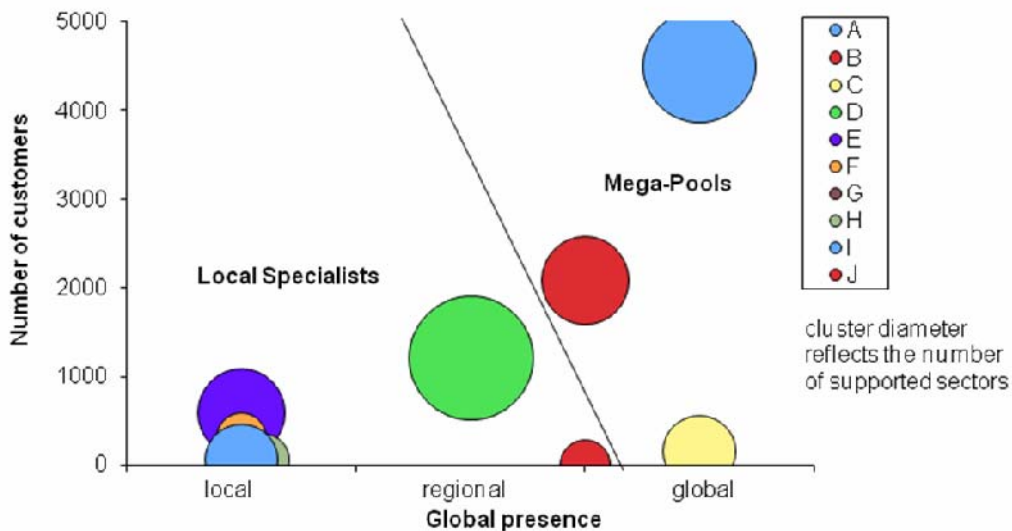
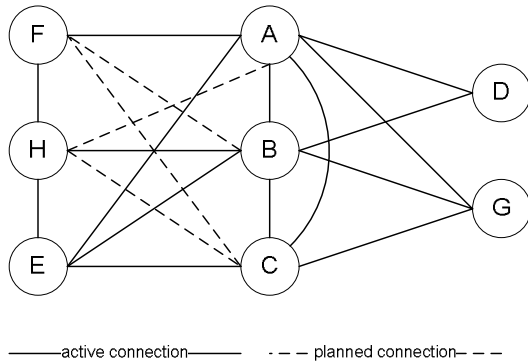


Figure 6. Pool segmentation

to do so in the near future. Apart from connections to the mega pools, interconnections between the local specialists are almost non-existent. Exceptions can be observed for regionally adjacent pools: F and H as well as H and E are based in countries which share borders, for instance.



**Figure 7. Active GDSN connections**

### 5.3. Implications

**Implications for data pool providers and their customers.** The indicated evolution of data pools imposes some implications on future development strategies for their providers as well as the preferences of users. Mega pools face a tough market consolidation and need to position themselves as global players in multiple countries. They will attract multinational retail and industrial companies that need to distribute their master data across an international value chain. Mega pools should further diversify into product sectors with global reach such as apparel & sports or electronics, with the aim of realizing first-mover advantages in these sectors and obtaining the critical mass of multinational customers. Local specialists, on the other hand, need to focus on locally operating companies such as SMEs or on sectors with national or regional particularities such as e.g. media or fresh groceries. In comparison with the mega pools, they are able to tailor services for their local markets and industries, e.g. in the form of specific data models or supplementary services. By focusing on specialized markets and industries, they might also play a major role in onboarding smaller suppliers and retailers to the GDSN.

**Implications for researchers.** Our research also indicates that the GDSN leads to a global network of specialized data pools, thus providing an industry-wide collaboration infrastructure to retail and consumer goods companies. Further empirical work is necessary to validate the identified evolution paths of data pools and to analyze

whether the GDSN is overcoming “excess inertia”. Given the fact that the GDSN complements the EPCglobal network by providing product information about the RFID-tagged item [13, 18], future work should explore the synergies of the two networks in more detail and deduce implications for the inter-organizational product data alignment and the role of data pools.

With regard to the classification of online intermediaries, our research suggests that data pools do not fit the categories from previous research. Given their portfolio of services, they are assuming the role of an infomediary to the B2B field, but do not focus on matching buyers and sellers. Thus, our research calls for further investigating the role of B2B intermediaries in data synchronization between business partners.

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**APPENDIX A. Overview of Data Pools**

<b>Data pool</b>	<b>A</b>	<b>B</b>	<b>C</b>	<b>D</b>	<b>E</b>	<b>F</b>	<b>G</b>	<b>H</b>	<b>I</b>	<b>J</b>
<b>Organizational Setup</b>										
<b>Ownership</b>	Consortium	Consortium & 3rd Party	Consortium	Consortium	Consortium	Consortium	Consortium	Consortium	3rd Party	Consortium
Customers: -Retailers -Suppliers	945 3555	157 1923	15 135	10 1200	12 571	5 295	1 150	8 52	4 54	2 0
Suppliers-to-retailers ratio	3.76	12.25	9.00	120.00	47.58	59.00	150.00	6.50	3.76	12.25
<b>Informational Services</b> (described by the type and number of master data objects and their customization to address geographical or industry specificities)										
<b>Data Objects:</b>										
-Product	X	X	X	X	X	X	X	X	X	X
-Party	X	X	X	X	X	X	X	X	X	X
-Price	X	X	X	X	X	X	X	X	X	X
-Others	X	X	X	X	X	X	X	X	X	X
<b>Geographical focus</b>	Global (4 regions)	Regional (7 countries)	Global (2 regions)	Regional (7 countries)	National (1 country)	National (1 country)	National (1 country)	National (2 countries)	National (2 countries)	Regional (9 countries)
<b>Industry focus</b>										
-FMCG	X	X	X	X	X	X	X	X	X	X
-Hardware	X	X	X	X	X	X	X	X	X	X
-Apparel & Sp.	X	X	X	X	X	X	X	X	X	X
-Electronics	X	X	X	X	X	X	X	X	X	X
-Office suppl	X	X	X	X	X	X	X	X	X	X
-Others	X	X	X	X	X	X	X	X	X	X
<b>Integration Services</b> (described by the level of electronic interaction and the number of pool-to-pool linkages)										
-Paper	X	X	X	X	X	X	X	X	X	X
-Portal	X	X	X	X	X	X	X	X	X	X
-EDI, XML	X	X	X	X	X	X	X	X	X	X
# of pool-to-pool linkages	13	4	4	3	3	1	3	3	0	0
<b>Revenue model</b> (described by the components of the pricing model)										
-Revenue	X	X	X	X	X	X	X	X	X	X
-Items	X	X	X	X	X	X	X	X	X	X
-Transactions	X	X	X	X	X	X	X	X	X	X
-Partners	X	X	X	X	X	X	X	X	X	X
-Technology	X	X	X	X	X	X	X	X	X	X