

B2B-Sharing in Supply Chain Management: New opportunities in a rapidly changing environment

Yannick Hirt & Clemente Minonne

Lucerne University of Applied Sciences and Arts,
Research Group for Digital Business Engineering (DBE),
Horw, Switzerland

Corresponding author email: clemente.minonne@hslu.ch

Abstract

This article deals with the topic of the «Business to Business (B2B) Sharing Economy». The concept of «sharing» has become increasingly popular in recent years and the aspect of environmental protection, in particular, is often mentioned as a reason for this, as well as lower prices for consumers. It is, therefore, understandable that start-ups with new business models in this area are becoming increasingly more prevalent. Their business is mainly concentrated in the consumer goods industry. But what about the so-called B2B context? This is associated with sharing resources, such as machinery, personnel or infrastructure between companies. An essential component of this change is industrial digital sharing platforms, which provide the services necessary to make the networking of the various actors in the business ecosystem, more effective and efficient.

By means of an exploratory empirical study in Switzerland, the following research questions were investigated:

- To what extent are companies already familiar with the term «*B2B sharing*»?
- To what extent have companies already integrated «*B2B sharing*» concepts in their business activities?
- Are there already successfully implemented business models that include the features of «*B2B sharing*»?
- How willing are companies to embrace cooperative «*B2B sharing*», which may imply that they would cooperate with competitors?
- Which ideal, high-level approaches of business models can be recommended in the context of «*B2B sharing*»?

The literature illustrates that a change in this area is necessary on the part of companies to be able to manage business processes cost-effectively in the future (Minonne, 2016). This requires trust and flexibility from the cooperating partners. Certain central business processes must also be designed differently. New actors will participate in the inter-organisational handling of business processes.

In order to secure the necessary database in an exploratory sense, a survey was conducted with participants from different industries, from companies of different sizes and working in different roles. This empirical study shows, among other things, that the range of companies throughout Switzerland with experience in cooperative activities and those without experience, is extensive. The results also differ regarding the willingness to implement B2B sharing. The majority of the participating companies are of the opinion that they would be willing to enter into sharing collaborations. However, they are still hesitant to implement «*B2B sharing*» concepts in practice, which they justify with regard to the risks involved in sharing information with (potential) competitors. Certain companies report that various obstacles arise making it impossible to engage in new cooperative activities, while other companies already boast fully integrated business processes (Minonne, 2016). The purpose of this dedicated study is to illustrate the current level of acceptance with regard to «B2B sharing» in Switzerland.

Keywords

Sharing Economy, B2B Sharing, Sharing Platforms, Industrial Platforms, Supply Chain Management

Introduction

The sharing-economy is enjoying increasing attention. People are beginning to question the meaning of «owning». Is it necessary to own things? To pay for goods over and over even though they are used only once or twice? How do businesses behave in this context? Are companies seeking to share instead of own? Is there any movement in the B2B context that reflects the thoughts and discussions that are going on in the private context? The present investigation contributes to providing insights into the topic of B2B sharing, leading to better understanding.

Literature Review

In most places, a key objective of any company is to keep productivity as high as possible. Industrial revolutions in the past have generally led to increased productivity. This is shown by the development of assembly line production or electronic data processing. Today, we are experiencing another industrial revolution with the «*Internet of Things (IoT)*», in which all kinds of concepts can be linked together. In the future, as technologies continue to develop, human activity will be replaced by robots or other intelligent systems in certain industries and business activities (Rifkin, 2016). Big Data is already well known and is creating new opportunities in terms of product and service development, as the collection and analysis of customer data will help to better understand customer needs and develop novel solutions (Hujran et al., 2015). However, in the future it will no longer be enough to market just one product or one service. Until the end of its life cycle, a product must be constantly adapted to customer needs, which may change during its life cycle. For this purpose, i.e. the IoT offers the possibility of monitoring the way the customer uses the product or service. Extension offers or «*value added services*» are increasingly seen as a decisive differentiating feature and serve as the basis of the customer experience (VDI, 2016). According to estimates, Industry 4.0 should enable an annual productivity increase of between 6% and 8% (Acatech, 2015). With the availability of digital manufacturing capabilities, such as laser cutting, CNC machines or 3D printing, collaboration between several partners is becoming increasingly significant (Peuckert, 2018).

In this context the terms «collaborating» and «sharing» have two different meanings. «Collaborating» occurs when two or more parties work together to create or to achieve the same thing (Cambridge Dictionary, 2020). On the other hand, «sharing» means having or using something that belongs to someone else (Cambridge Dictionary, 2020).

Since the last industrial revolution, the prosperity of industrialisation has been characterised by technological progress, and the production of machines and goods, as well as know-how is protected by patenting and licensing. From an economic point of view, ownership of something is seen as a prerequisite for innovative action by a company (Redlich, Buxbaum-Conradi et al., 2016).

However, the economy is currently undergoing a change from «*owning*» to «*sharing*» goods or services. This primarily occurs between individuals and not between companies, which means that completely new conditions are being encountered in the market. Existing seller/buyer relationships are disappearing and new business models are emerging (Owyang, Altimeter Group, 2013). The following quote defines the collaborative economy very aptly:

«The collaborative economy is an economic model where ownership and access are shared between corporations, startups, and people. This results in market efficiencies that bear new products, services and business growth.»

Owyang, Altimeter Group, 2013, p.4

In today's business ecosystems, industrial service providers, plant operators and machine manufacturers cooperate at the respective value creation level. This results in data not being used sufficiently. There also appears to be little transparency in the market. In the business ecosystems of the future, the often quoted «*digital ecosystems*» will be different. The focus will be on service platforms that process cross-company data and enable coherent, so-called end-to-end processes (Minonne, 2016). The resulting knowledge can be used to increase productivity by adapting processes accordingly. Collaboration and cooperation also play an increasingly important role, as they enable companies to make better use of their own resources and act more flexibly (Acatech, 2015).

The collaborative economy is influenced by three forces, namely technological, economic and social factors. Examples of technological factors are social networking, payment systems or mobile devices and platforms. Economic factors are mainly understood as unused capital, monetary surplus, increased financial flexibility or access to property. Examples of social factors include the desire for society, increasing awareness of sustainability or increasing population density (Altimeter Group, 2013). The collaborative economy is an economic model that enables the sharing of digital content and physical goods through information and communication technologies, so that unused goods can be used in exchange for

monetary or non-monetary services. Technology thus provides the basis for a better use of resources (Zimmermann, 2017) and calls for a global approach to the economy.

The term «collaborative commons» was born out of the optics of this change. As technologies continue to evolve, society's way of thinking is increasingly changing. Networking is becoming more and more intensive, ownership is no longer seen as important and self-interest is subordinated to the common interest (Dew, 2015). Sharing enables a more efficient use of goods (Antikainen et al., 2018). The difference between collaborative commons and capitalism is the pursuit of quality of life. Whereas capitalism has more to do with having as much capital as possible, collaborative commons strives to enjoy a sustainable and satisfying quality of life, to connect and share with others. Whereas the former is characterised by ownership and personal responsibility, the latter embodies transparency, open-source innovation and the search for community. Economic prosperity is no longer measured by monetary or market capital, but by its contribution to society (Dew, 2015). As Minonne (2019, p.16) articulates in his research:

«In the past, the goal of prosperity dominated in industrialised countries, but now, in the capitalist system, people are longing for well-being!»

Another characteristic of the collaborative commons is the decentralised and distributed idea. The free market and the socialist bureaucratic state, which are above all the faces of capitalism, no longer have a place in the sharing community. Through the IoT, a network of infinite interconnection is created. This creates the involvement of all participants, universal access and transparency, which in turn leads to innovation and co-creation. Due to peer-to-peer production in a lateral global network, made possible by the IoT, marginal costs in the zero range can be achieved, such as offering renewable energy in a decentralised power grid (Dew, 2015). With regard to sharing possibilities, which are mediated on platforms, a further element is created in the innovation system, in addition to the classic subsystems of science, business and government. This requires the actors in the system to have new skills, as well as the development of new business models (Peuckert, 2018). According to Minonne, «*digitalisation means economic transformation, which consequently requires social change!*» (Minonne, 2019, p.4).

In order to be able to exploit the potential of a sharing society, an infrastructure that is geared to this and functions well, is required. As technologies evolve, the

infrastructure becomes more mature, faster and more efficient. This benefits companies that can find ways of utilising new technologies to increase their productivity. A good example is the electricity grid, where Henry Ford made it possible to increase efficiency, using electrical machines (Rifkin, 2016). Upcoming developments will also create new opportunities for production and distribution. Examples of this are the 5G telecommunications network, which will be the new standard in the next few years, making it possible to communicate at a greater performance level, or the electricity network which is about to undergo a transformation with more and more private electricity producers, will have to be connected to the grid and will also consume and feed electricity into it.

In the sharing economy, a digital platform is a crucial element of the infrastructure (Antikainen et al., 2018). This allows new partners to participate who may never previously have been considered, which in turn increases choice. Cooperation and knowledge exchange between service providers and operators, via a service platform, optimise processes and handling (Acatech, 2015). Production capacities, resources and logistics services can be quickly identified and shared. This makes processes more efficient and responsive (Antikainen, Aminoff & Heikkilä, 2018; Minonne, 2016). The complete value chain is optimised by horizontal integration between operators. Increased planning reliability is made possible by up-to-date, order-related status information. The offering and provision of production capacity between plant operators and plant owners is made possible, which leads to better resource utilisation (Acatech, 2015).

Companies should develop goods or services not only for the customer but also with the customer (open innovation). One way of doing this would be to provide a platform where customers can exchange or share their own ideas. The advantage of this is that the relationship with the customer becomes much closer. It also improves performance and opens new market opportunities, as the customer contributes to the development. This, in turn, reduces costs because less time and effort need to be invested in market analysis and research. One example is Lego, which provides a development platform for its customers where ideas, concepts and new products are defined and shared (Owyang, Altimeter Group, 2013).

The concepts of business-to-customer (B2C) or customer-to-customer (C2C) sharing are already widespread, but B2B sharing is now becoming increasingly popular. Some companies see themselves more as competitors than as partners. Although there is great potential for

sharing between companies, for example, machines or personnel, companies often seem to be unwilling to do so (Berthold, 2019). Since the provision of resources does not often generate the desired financial return, companies lose interest in experimenting. Open knowledge production is usually only carried out by actors who do not pursue commercial interests (Peuckert, 2018). Moreover, the implementation of a B2B sharing concept in a company requires a business model innovation (Antikainen et al., 2018).

Sharing between companies offers many advantages for users and suppliers. For example, the user has increased access to resources and lower search costs, order fluctuations can be absorbed and no capital expenditure on property is required (Nessensohn, 2017). Companies become more efficient and can work faster through sharing activities, providing the opportunity to react with more agility to market changes. Cost optimisation of the value chain, a more flexible design of business processes, competitive differentiation and the development of better products are further advantages (Berthold, 2019; Minonne, 2016). The provider can monetise their resources by offering to share platforms, i.e., by improving opportunity costs or contribution margins. In addition, they can expand its customer network and identify new cooperation partners, which might bring benefits in the future. Finally, the aspect of sustainability is promoted, which is beneficial for society as a whole (Nessensohn, 2017).

However, B2B sharing also brings with it negative factors. For example, it is difficult to integrate B2B sharing concepts into existing complex business processes. Moreover, legal and insurance aspects are questionable and are not clearly defined. Another factor is quality and experience. For example, the bad experiences of one company resulting from a shared service with another company, can have major consequences, prompting companies to choose to forgo shared services (Berthold, 2019). Building trust is of great importance when sharing resources. There is also a high level of competitive pressure, which is why some companies do not want to share their data and processes with other companies. Another factor could be that the so-called millennials, who have a close emotional connection to the society of sharing, have not yet reached the management levels of companies and therefore, such discussions are rarely on the agenda of management teams (Nessensohn, 2017).

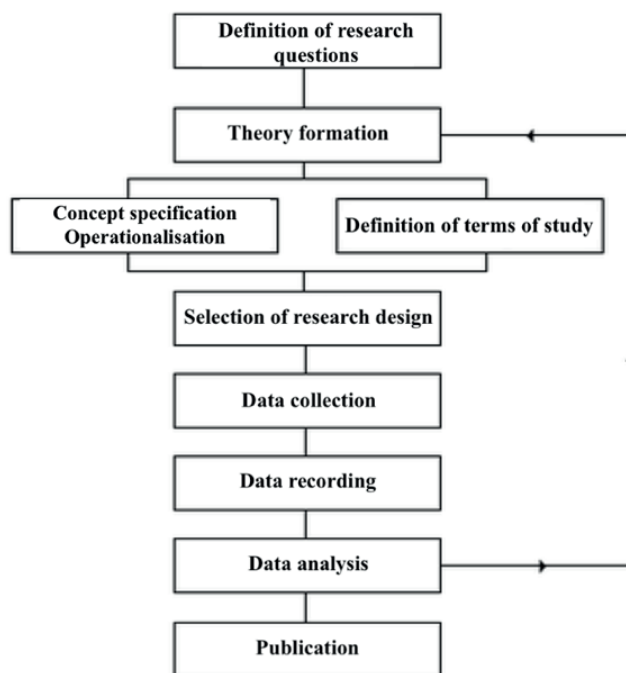
In Europe, the B2B sharing economy is not yet of great importance. However, with Industry 4.0 and the IoT, awareness will change and will become established in Europe (Berthold, 2019). The economic environment will

force companies to overcome their perceived obstacles and participate in B2B sharing (Mompó, 2017).

Research Methodology

At the outset, the research process and methodology were formulated based on Schnell et al. (2011), as shown in Figure 1. This process is particularly suitable for examining and confirming theories or hypotheses relating to empirical data. To facilitate the design of the quantitative survey, the first step was undertaken, which constituted a formulation of the research problem, followed by a comprehensive review of the relevant literature. There were around two dozen sources of particular interest from authors of publications regarding similar research into the qualitative aspects of B2B sharing, which supported the drafting of the survey, needed for this investigation.

Figure 1: Research Processes



Once the research questions were defined, the theory formation was initiated, by means of literature research. Subsequently, the concept specification followed, which involved clarifying theoretical ambiguities and defining terms to be considered for the study. In relation to the operationalisation of the survey, there were different types of research designs and the authors had to decide on an investigation format. In a further step the required

data were collected and analysed. At the site of the data analysis, the feedback to the defined research questions took place, comparing the empirical interpretations with the theory. The final step was to publish the study in the context of the present article.

Definition of Research Problem

The research problem was defined, based on the insights of a pre-study, conducted in the German-speaking region of Europe. (Minonne, 2015). On this basis, the research questions were drafted. These consisted of a main research question and several sub-research questions, derived from the main question. The aim was to clarify these sub-research questions in detail, until the main research question could finally be answered.

Theory Formation

Following the drafting of the research questions, the authors initiated the theory formation. In general, there were two possible situations. Either theories already developed were available in the literature, or a new theory for clarifying the field of research had to be developed (Schnell et al., 2011). Since in this case there was relatively little theory in this research field, a transfer of theories from a similar subject area was carried out, in accordance with the procedure of Schnell et al. (2011).

Concept Specification and Operationalisation

The concept specification related to clarifying any ambiguities in theory and defining which terms from the existing theory could be used in the investigation. Operationalisation involved assigning indicators to theoretical terms, so that the measurements collected during data collection, could be assigned to specific terms. This phase of the research process also included the development of measurement instruments, such as questionnaires or observation categories (Schnell et al., 2011, p.7). The content of the questionnaire was then discussed in a workshop with business representatives, who are actively engaged in the field of B2B sharing. Thanks to the dialogue with these experts, all of whom have long-standing experience in the field of B2B sharing, the questionnaire was assessed objectively and modifications made to improve the quality of the questionnaire content, ensuring that useful and meaningful results would be achieved.

Data Collection and Recording

An online survey was carried out over a 1.5-month period, starting at the end of April 2019 and using the Qualtrics tool. The target group for the survey were individuals who had expertise in and who were currently working on a daily basis in the field of supply chain management.

Participants were selected randomly through relevant research groups, specialised forums and invitations, posted on appropriate websites. In addition, direct invitations were made using a snowball selection process to ensure that different sectors were represented in that data collection. Respecting the confidentiality of respondents and responses, all participants agreed to contribute to the study on a voluntary basis. Data collection was primarily achieved as a result of assessments, based on a Likert scale, so that ordinal and nominally scaled attributes could be applied to the responses. For certain questions, it was possible to have multiple answers. Furthermore, respondents were given the opportunity to respond to every question with «no evaluation», simply to prevent a random response due to lack of knowledge regarding a particular topic.

The data collected were stored, recorded and processed. For an evaluation to be possible, the data were structured. The advantage was that the survey was conducted using an online survey tool, which greatly facilitated data collection, as the tool performed this task.

Data Analysis and Interpretation

In total, 57 completed questionnaires constituted the sample for this study. An analysis of the quantitative data was performed, using the statistical functionalities of Qualtrics. For a more precise investigation, contingency tables were used. These tables, also known as crosstabs, contained either absolute or relative characteristics that usually provide a rich supply of data to enhance any study. In this study, crosstabs were created for selected questions to facilitate a comparison between the industries and roles of the study participants. Therefore, should there be insufficient responses from a particular industry, that industry was grouped with others in the category of «other industries». It should be noted that the results obtained from this study primarily reflect the opinions of executives and specialists who deal with supply chain management. Charts, statistics and graphs were suitable for data interpretation, as these lent themselves to particularly clear and facilitated editing.

Structure of Survey

Based on the findings from the literature and pre-studies, conducted in a German-speaking region of Europe (Minonne, 2012; Minonne et al., 2015), a theoretical model was developed for the survey (Figure 2), which represents a cycle-based framework (counter-clockwise).

The cycle-based model is divided into four phases, which represent the main factors. Starting with Readiness & Analysis, a company then goes through two phases,

Figure 2: Structure of the Survey



namely, Target Concept and Implementation until the cycle is completed with Evaluation. Each phase has been extended with subfactors, which include detailed aspects matching the main factors. The factors were determined based on primary and secondary research.

Participants

As aforementioned, a total of 57 companies from various business sectors took part in the survey. The majority of the respondents held internal management positions, representing the production, logistics or supply chain management divisions. Most participants were employed as «Head of Production», «Production Manager», «Department Manager» or «Operations Manager».

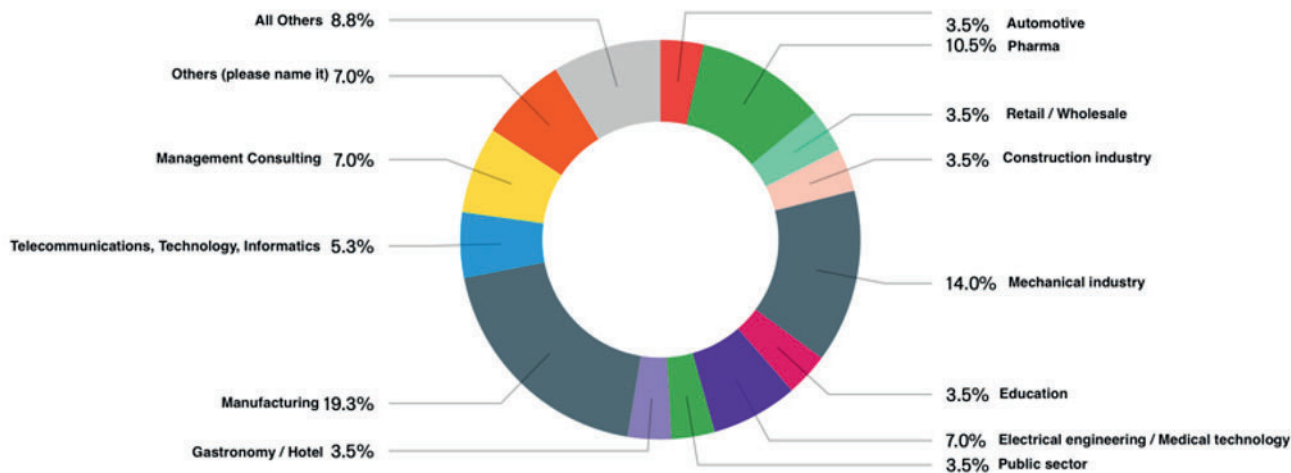
Industries

Most of the companies came from the manufacturing, mechanical industry or chemical sector. Under the selection «others», three companies stated that they were active in the railway sector, electronics market, media/movie production and HR services. Figure 3 shows the distribution of the largest sectors.

Results

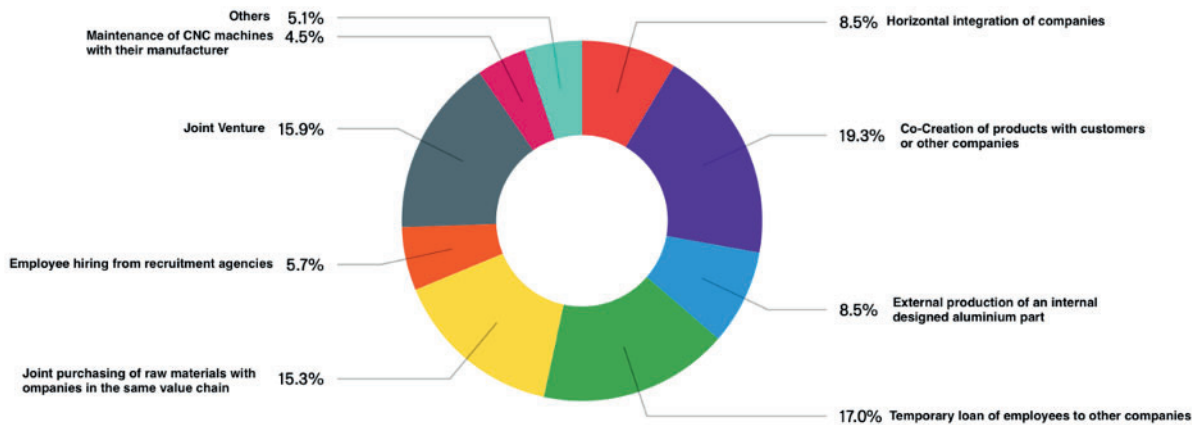
Participating companies were asked to select examples of collaborative or cooperative activities. Figure 4 illustrates the distribution of the selected answers. It may be clearly observed that the most frequently cited examples are concepts that represent models of collaborative and cooperative activities, identified in the literature, such as joint ventures, temporary staffing or co-creation. The outcome of the primary research thus confirms the

Figure 3: Distribution of Sectors



n=57

Figure 4: Understanding of Collaborative Activities



n=48

statements identified in the literature. All options were selected by the respondents, although certain proposals could be seen more as a service provided by a company, such as the external production of a piece of aluminum. Under «others», the respondents mentioned proposals that were quite specific, such as cooperation with universities or external specialist companies. In addition, general examples were mentioned which were already known from the literature, such as a joint data exchange to improve know-how, exchange of resources, IT infrastructure, research projects or staff leasing.

Furthermore, contract packing, wall-to-wall, joint development, research consortia, co-marketing and distribution or customer warehouse management were also mentioned. Some of these approaches can be derived with high probability from co-creation to specific business areas.

The evaluation of the factor readiness shows that companies would be prepared to engage in cooperative activities. More than three-quarters of respondents reported that their employees would support sharing activities,

Figure 5: Comparison of Satisfaction, Workload and Planning of Collaborative Activities

		We increasingly intend to do collaborative activities with other companies.		Sum
		Yes	No	
We are satisfied with the utilization of our machines.	Entirely true	0	1	1
	More likely true	5	7	12
	Rather not true	0	4	4
	Absolutely not true	0	1	1
	Sum	5	13	18
We are satisfied with the utilization of our infrastructure (e.g. office space, production area, etc.).	Entirely true	0	2	2
	More likely true	3	9	12
	Rather not true	2	2	4
	Absolutely not true	0	0	0
	Sum	5	13	18
We are satisfied with the utilization of our employees.	Entirely true	1	3	4
	More likely true	4	7	11
	Rather not true	0	3	3
	Absolutely not true	0	0	0
	Sum	5	13	18

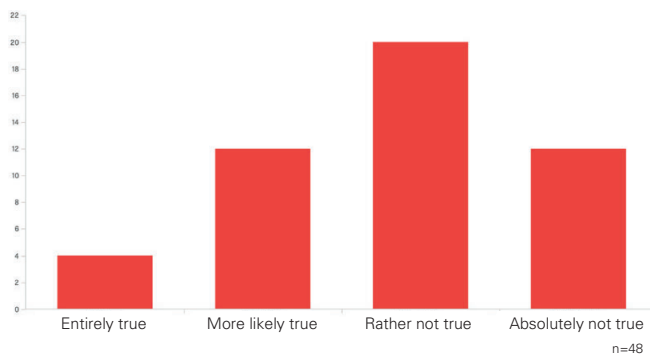
and around 60% reported that their company structure could react quickly to new situations. Around 60% would also be prepared to loan their employees to other companies. The results relating to the time taken to introduce cooperative activities with extra effort, was remarkable. Half of those surveyed reported that they did not have the time to deal with this issue.

Regarding the utilisation of resources, 67% were satisfied with the utilisation of their machines. More than a quarter of respondents would not provide their machines for sharing purposes on site, while around 46% tended not to do so. On the other hand, 22% would be willing to do so, and for two of the 57 respondents, this was even a reality. As far as the complexity of the machinery was concerned, three quarters of respondents agreed that a great deal of experience and training was needed to operate it. A clear minority reported the opposite. As far as personnel were concerned, satisfaction with capacity utilisation was 74%, and more than a third of respondents were even very satisfied with their workload. For a quarter of respondents, the utilisation of personnel fluctuated significantly during the year, for around a third this occurred on a regular basis and for around 43% there was little fluctuation. As far as infrastructure was concerned, one third of the participants were satisfied with their workload. Almost half of the participants had unused capacity in infrastructure. For most of the participants this seemed to be between 10% and 25%. It is interesting to note that three quarters of

the companies that had unused capacity in their infrastructure, would not be prepared to share it.

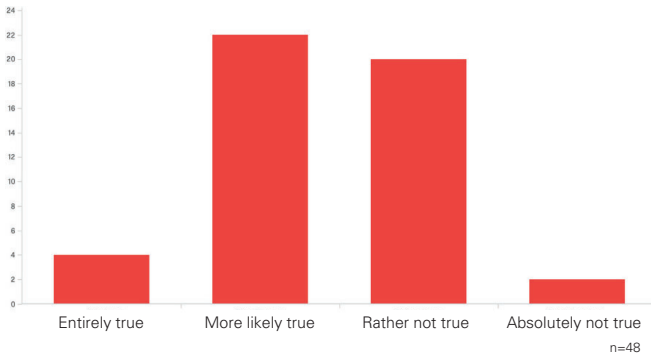
If one compares the answers to the question regarding whether companies intend to engage in collaborative and cooperative activities with the question of how satisfied companies are with the utilisation of their resources, surprising results can be observed (see Figure 5). The majority of respondents who would not engage in sharing activities were of the opinion that they were satisfied with their resource utilisation. However, a small number of respondents would still not engage in cooperative activities despite insufficient utilisation. A total of five of the 13 respondents who would not participate in sharing, maintained that they were not satisfied with the utilisation of their machines. Among those who would take up

Figure 6: Collaborative Activities with Competitors



Note. Survey statement: «We would also carry out collaborative activities with our competitors (e.g., joint machinery or joint ventures).»

Figure 7: Abuse by Competitors

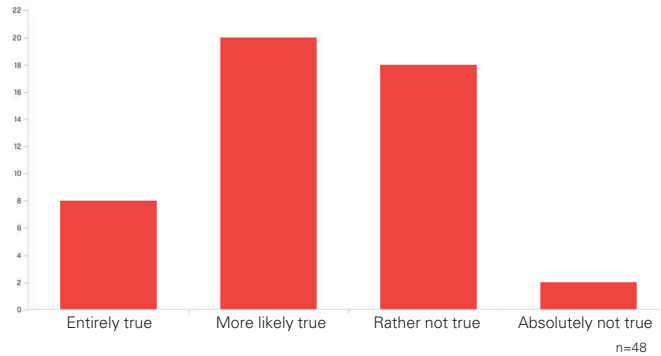


Note. Survey statement: «We fear that our competitors could abuse our collaborative activities (e.g., use of shared resources).»

collaborative activities, none of them were dissatisfied with the utilisation of their machines. It is also interesting to note that essentially no respondents who would be prepared to participate in sharing activities, were generally dissatisfied with their resource utilisation.

An interesting aspect is also shown in relation to the question of activities with competitors and the risk of abuse by competitors. With regard to the former, most respondents believed that they would not enter into such an arrangement; 41% would rather not consider it and 25% would not consider it at all. However, around 8% would be willing to cooperate and around a quarter thought they would be more willing to do so (see Figure 6).

Figure 8: Data Security Risks

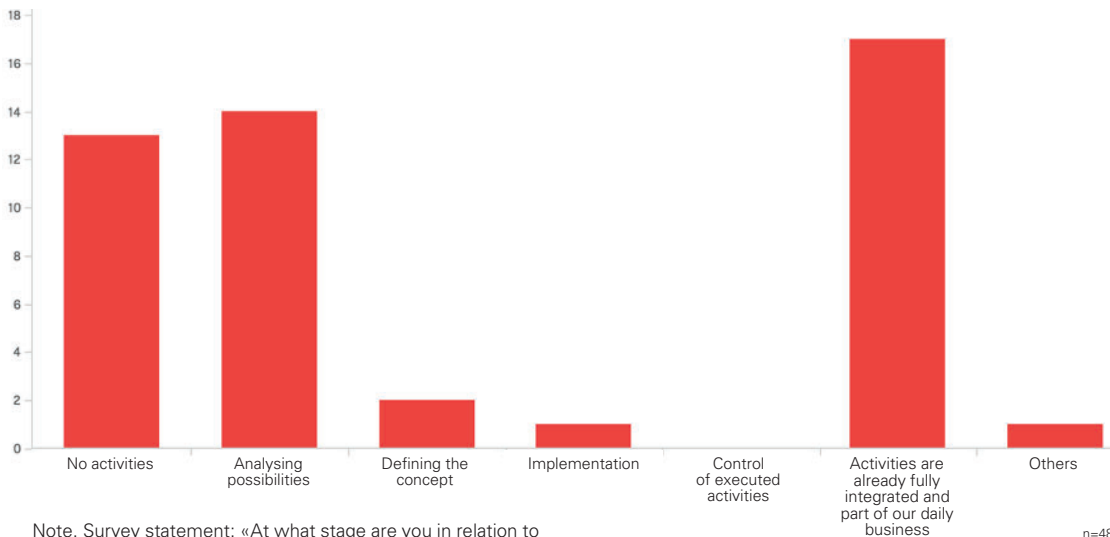


Note. Survey statement: «We fear risks when sharing production data or other company-relevant data if we perform collaborative activities with other companies.»

In relation to the second question regarding the fear of exploitation by competitors, there is no clear result, as Figure 7 shows. A narrow majority (54%) of those surveyed feared that their openness could be abused by competitors in sharing activities; 8% of them were in total agreement with this, with only 4% disagreeing.

An exciting result is also shown in the distribution of answers to the question of whether companies fear risks when sharing production data or any company-relevant data with other companies (see Figure 8). Around 58% agreed with this statement; 17% were in total agreement with this. In each case, around 40% tend to either agree or disagree with the statement.

Figure 9: Collaborative Activities Phase



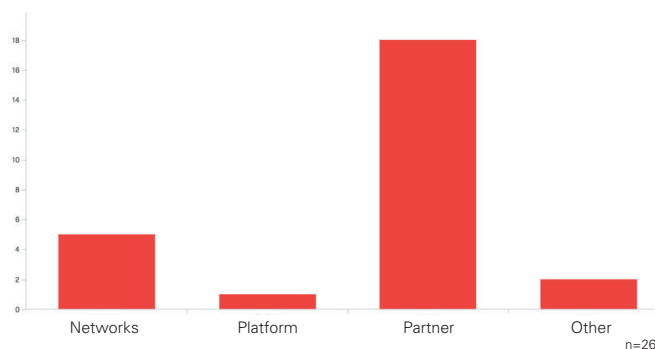
Note. Survey statement: «At what stage are you in relation to collaborative activities with other companies/organisations?»

As can be seen in Figure 9, when asked about the degree of implementation of collaborative and cooperative activities, around one third of respondents (36%) stated that such activities were already part of their daily business. Just under a quarter (27%) were still at the initial stage and were still busy analysing possibilities. A further third (29%) did not carry out any collaborative or cooperative activities. Under «others», one respondent mentioned that staff and knowledge sharing is already being carried out, so this respondent would be considered among those companies in which sharing activities are already integrated.

During implementation, the results were mainly viewed in relation to existing concepts or the experiences of the respondents. For example, 53% of the respondents had knowledge or experience of carrying out sharing activities via platforms or through networks or partners, as shown in Figure 10. Those respondents who already had knowledge or experience in this area indicated in the follow-up question which three approaches they had already dealt with. Thus, the clear majority had already gained experience in collaboration and cooperation through partnerships. Few respondents had knowledge of sharing activities via internet platforms. Under «others», one respondent stated that they had experience of all three approaches. Another respondent stated that they had carried out cooperative activities with companies within their holding company.

Collaborative activities already constituting an element of the business model of a company were observed in 17 out of 48 respondents. Most of them (65%), stated that

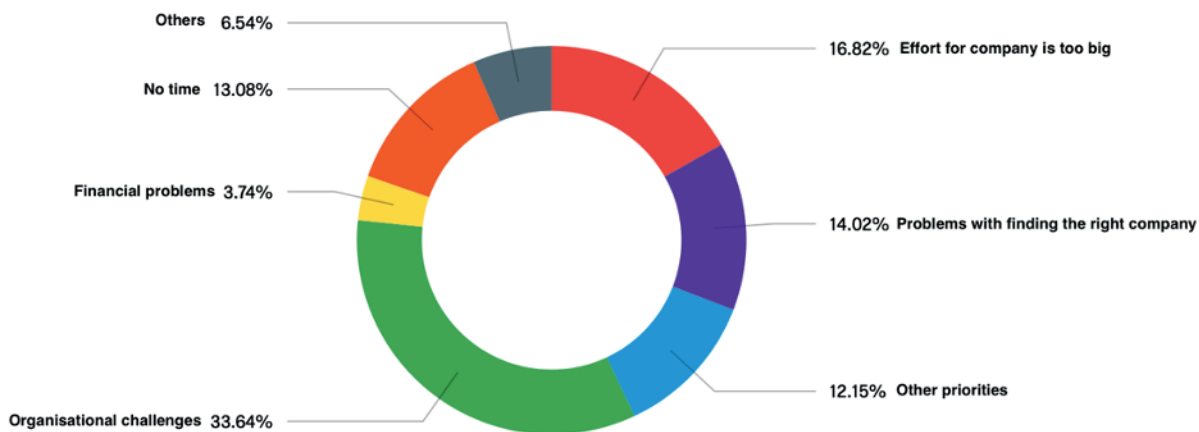
Figure 10: Knowledge and Experience



Note. Survey statement: «We have knowledge or experience of networks, platforms or partners to perform collaborative activities. – Which ones?»

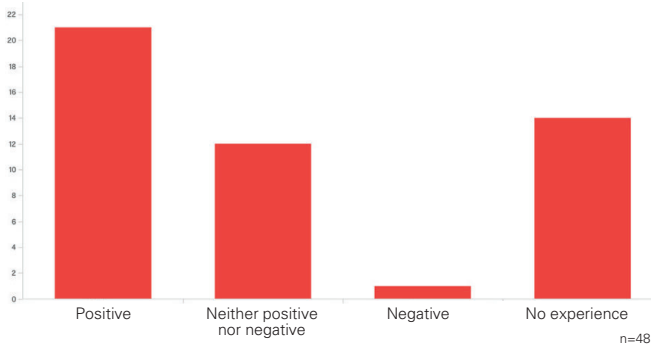
they had been involved in collaborative activities for over five years. Three participants were found in the category of one to three years, with a further three in the category of three to five years. On the other hand, 63% stated that they had already carried out collaborative activities with other companies and therefore had experience in this area. When asked whether their companies intended to engage in more sharing activities, almost three quarters of the respondents answered «no». Figure 11 shows the possible challenges that the respondents may have encountered during the development, introduction and execution of sharing activities and their relevance. For example, one third of respondents considered the organisational challenges to be problematic, whereas financial aspects did not seem to be an obstacle. Other challenges were mentioned including

Figure 11: Challenges



n=48

Figure 12: Assessment of Collaborations that have taken place



Note. Survey statement: «Collaborations with other organisations were:»

increasing complexity as more parties were involved, contractual and legal challenges, lack of openness, issues relating to capacity, short-term changes in supply/demand and planning reliability.

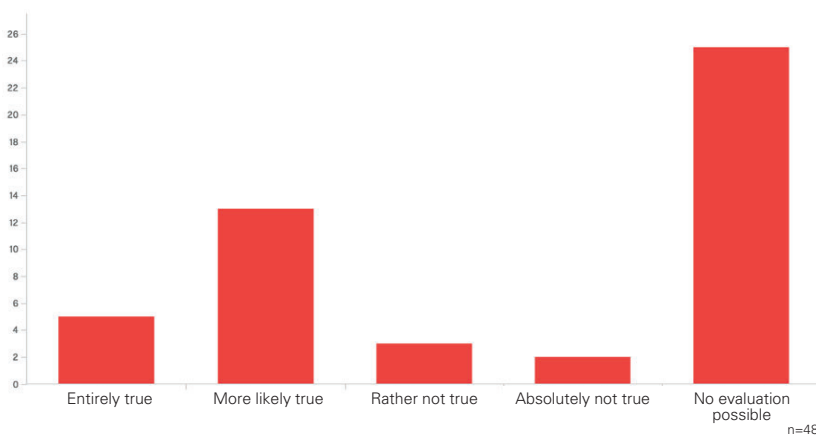
In the reflective element of the survey, the respondents had to assess how successful their collaboration and cooperation with other companies had been. In response to the first question, around 45% stated that the work was positive, for around a quarter it was neither negative nor positive, only one respondent had negative experiences and for 30% no assessment was possible (see Figure 12).

An assessment of a lasting increase in resource utilisation through sharing activities was not possible for 52% of the respondents. The assumption is obvious, namely,

that they did not perform cooperative activities over a long-term period. The majority of those who were able to give an assessment stated that they noticed an improvement in resource utilisation (see Figure 13). Only five respondents claimed that this was not the case.

With regard to the question of whether an additional and long-term yield could be generated by cooperative activities, the answers correlated with the approaches mentioned in the theory. Excluding those who did not give an assessment, around 83% of the respondents achieved an additional return, and for around 66%, the return was even long-term. Only a small proportion (five respondents) indicated there was no return generated by collaborative activities, and for 10 respondents, the return was only short-term.

Figure 13: Change in Resource Utilisation



Note. Survey statement: «We were able to increase resource utilisation permanently through collaborative activities with other companies.»

Conclusion

The results of the survey have confirmed several insights and approaches identified in the literature. For example, the willingness of companies to take risks and develop new B2B sharing concepts is not prevalent among the majority of companies. A large proportion of the respondents already has experience in cooperative activities. However, these experiences have often been gained on a smaller scale with partner companies. The approaches mentioned, such as co-creation, joint venture or R&D consortium, show that the sense of collaboration has been clearly understood, despite the fact that the area of sharing is practically untouched by most companies. But what are the reasons for this? The results from the questions targeting the risks and abuse of data (sharing), indicate that companies fear disclosing their data. To explain this, the meaning of collaborating and sharing must be further analysed. When two companies collaborate, they usually have a common goal. As mentioned above, when one business shares something with another business, their goals might be different. One might seek a financial incentive, the other may need to solve an internal bottleneck. In that case, one of them has the whip hand. This can result in trust issues.

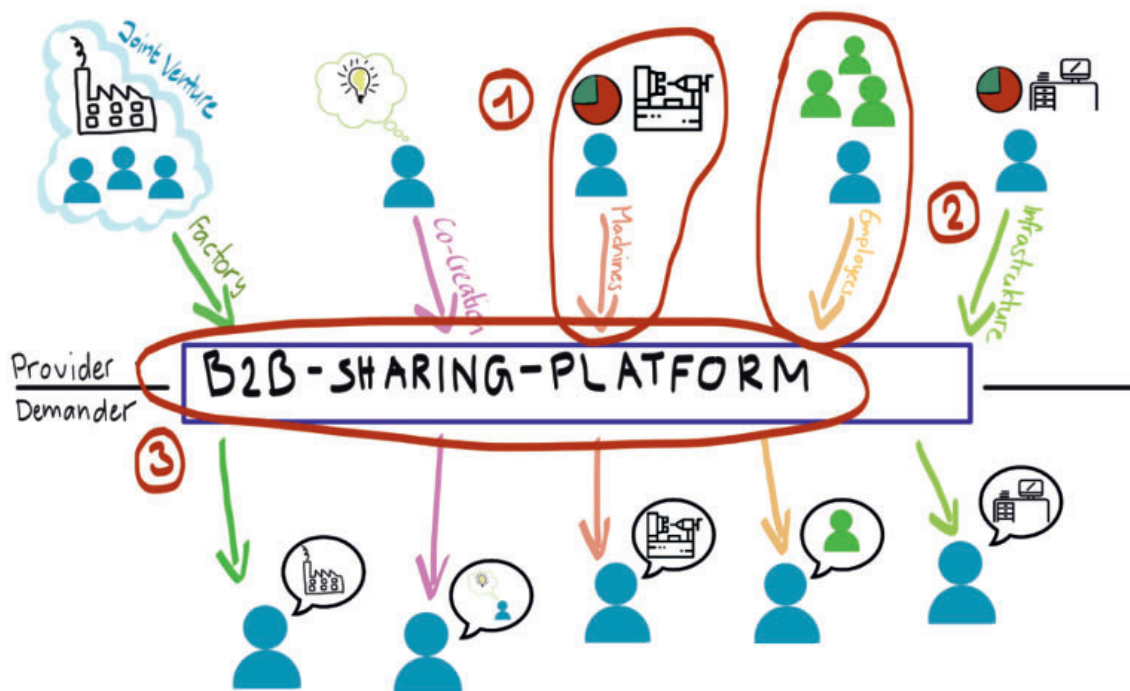
The following statements summarise what can be learned from this investigation:

- A theoretical understanding and practical approaches in the area of B2B collaborations exist currently (e.g., co-creation).
- A theoretical understanding of B2B sharing by businesses is not fundamental
- Practical approaches have either been fully implemented or are at an early stage of implementation

In relation to the concept of B2B sharing explained in the literature, where interactions between actors take place via an internet platform and businesses are thus directly linked to other businesses, hardly any activities have taken place.

Based on the findings from our literature review and the survey, what practical implications can be observed? B2B sharing offers huge potential for new business models, namely, the industrial sharing platform, which can be

Figure 14: B2B-Sharing Ecosystem Map



applied to almost every economic sector. In fact, three types of business models may currently be distinguished in B2B sharing. In the ecosystem map (Figure 14) these three types are illustrated. On the one hand, there are those that function as extensions to existing business models: (1) this could be a manufacturing company that offers its unused machine capacities to other companies. On the other hand, the core business model of a company may be a service (2), which is characterised by the features of B2B sharing, such as personnel leasing. Finally, there are business models that are supportive of the B2B

sharing system (3), such as providing a platform where businesses can meet with other businesses to share their capabilities or capacities. One possible business model, which was identified in the literature and has now been confirmed by this empirical study, is the provision of a digital matching platform. This could well be called a sharing industry platform. Even though none of the respondents has any experience of sharing in this particular context, the authors of this study have knowledge of start-ups that have set up such sharing industry platforms and are curious to see where this journey will lead.

References

- Acatech, (2015). *Smart Service Welt - Umsetzungsempfehlungen für das Zukunftsprojekt Internetbasierte Dienste für die Wirtschaft*. Retrieved from www.din.de/blob/67738/041425a58263dd135e083ba8fe814fac/umsetzungsempfehlungen-fuer-smart-service-data.pdf.
- Altimeter Group, Owyang, J., Tran, C. H. & Silva, C. H. (2013). *The Collaborative Economy*. Retrieved from collaborativeconomy.com/wp/wp-content/uploads/2015/09/Owyang-J.-Tran-C.-Silva-C.2013.The-Collaborative-Economy.Altimeter.pdf.
- Antikainen, M., Aminoff, A. & Heikkilä, J. (2018). *Business model experiments in advancing B2B sharing economy research*- Presentation.
- Berthold, G. (2019). *B2B Sharing: Der nächste Schritt für die Sharing Economy?* Retrieved from www.lead-innovation.com/blog/b2b-sharing.
- Cambridge Dictionary, (2020). Definition «Share». Retrieved from dictionary.cambridge.org/dictionary/english/share?q=sharing
- Cambridge Dictionary, (2020). Definition «Collaboration». Retrieved from dictionary.cambridge.org/dictionary/english/collaboration
- Dew, C. J. (2018). *Post-Capitalism: Rise of the Collaborative Commons*. Retrieved from medium.com/basic-income/post-capitalism-rise-of-the-collaborative-commons-62b0160a7048.
- Hujran, O., Wadi, R., Dahbour, R., Al-Doughmi, M. & Al-Debei, M. (2015). *Big Data: Opportunities and Challenges*.
- Minonne, C. (2019). *Digitaler Wandel: Haben oder Sein*, Presentation at the Digital Economic Forum, 2019, Lucerne.
- Minonne, C. (2016). *Business-Analyse: Konzepte, Methoden und Instrumente zur Optimierung der Business-Architektur*. Schäffer-Poeschel Verlag, Stuttgart.
- Minonne, C. (2015). *Reifegrad des Geschäftsprozessmanagements 2015, Eine empirische Untersuchung*. iProcessPublishing, Switzerland.
- Minonne, C., Turner, G. (2012). Business Process Management – Are you ready for the future? *Journal of Knowledge and Process Management*, Vol.19, Nr.3, pp.111-120, Wiley.
- Mompó, F. L. (2017). B2B sharing: the next logical step for Sharing Economy? Retrieved from www.co-society.com/b2b-sharing-next-logical-step-sharing-economy/.
- Nessensohn, I. (2017). *Sharing Economy B2B – Neues Potenzial für Unternehmen?* Retrieved from blog.hslu.ch/diginect/2017/12/18/sharing-economy-b2b-neues-potenzial-fuer-unternehmen/.
- Peuckert, J. (2018). *Beiträge plattformvermittelter Kollaboration zum Innovationssystem*. 10.1007/978-3-658-20265-1_3.
- Redlich, T., Buxbaum-Conradi, S., Basmer-Birkenfeld, S., Moritz, M., Krenz, P., Osunyomi, B. D., Heubischl, S. (2016). *OpenLabs - Open Source Microfactories Enhancing the FabLab Idea*. 2016 49th Hawaii International Conference on System Sciences (HICSS), doi.org/10.1109/hicss.2016.93.
- Rifkin, J. & Schmid, B. (2016). *Die Null-Grenzkosten-Gesellschaft: Das Internet der Dinge, kollaboratives Gemeingut und der Rückzug des Kapitalismus*. Frankfurt am Main, Germany: FISCHER Taschenbuch.
- Schnell, R., Hill, P. B. & Esser, E. (2011). *Methoden der empirischen Sozialforschung* (9. Aufl.). Berlin, Germany: Walter de Gruyter GmbH.
- VDI. (2016a). *Digitale Chance und Bedrohungen - Geschäftsmodelle für Industrie 4.0*. Retrieved from www.vdi.de/statusreport-geschaeftsmo-delle-fuer-industrie40/.
- Zimmermann, Vita. (2017). *Die digital-kollaborative Wirtschaft*. 10.1007/978-3-658-16652-6_2.