

Resource Sharing in Business-to-Business Contexts: Towards an understanding of the process and its management

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Abstract:

In today's political and economic environment, companies face the challenge of resource scarcity, rising cost due to inflation and the need to reduce CO2 emissions. This should give rise to concepts such as resource sharing with its promise of economic efficiency and ecological effectiveness. Still, sharing is not yet widespread in the business-to-business (B2B) context. The literature reveals a lack of empirical research and practical solutions. Addressing both gaps, this study applies a multiple case study within an action research strategy. Five sharing transactions between six SMEs reveal the characteristics of the B2B sharing process as a basis for developing supportive tools for its management.

The study contributes to theory by conceptualising the B2B resource sharing process as a flow of activities across three levels: organisation internal, in the dyadic sharing transaction and within the wider community of sharing willing companies. Also, it contributes to practice through four tools supporting companies with the tasks at all 3 levels: 1) Resource identification, 2) Partner matching matrix, 3) Transaction governance and 4) Sharing assessment.

Keywords: B2B sharing, action research, sharing economy

Track: Business-To-Business Marketing

1. Introduction

Resource sharing is a concept that promises economic, environmental, and social sustainability (Govindan et al., 2020) and, as such, has been gaining traction for more than a decade now with a potential that is estimated at \$1.5 trillion by 2024 (BCC Research, 2022). Within the business-to-business (B2B) sector, sharing has been defined as the collaboration between at least two companies upstream of customer-supplier relationships (Breunig et al., 2021; Govindan et al., 2020), driven by motivations to create economic, ecological and/or social value (Antikainen et al., 2018; Ma et al., 2020) by simultaneous or sequential use of as yet underutilised or inaccessible resources (Ruiz-Puente & Jato-Espino, 2020). Often, but not necessarily, this is facilitated by an intermediary role such as a sharing platform provider (Govindan et al., 2020; Laczko et al., 2019). Examples range from shared usage of machine capacity to sharing resources in logistics and distribution to personnel. The existing literature provides a good overview of involved actors, sharing resources, motivational drivers as well as barriers to B2B sharing, especially from a conceptual point of view (von dem Berge et al., 2022). Still, compared to customer-to-customer and business-to-customer contexts, there is a lack of empirical evidence for sharing in B2B contexts (Agarwal & Steinmetz, 2019; Plewnia & Guenther, 2018). In particular, a systematic understanding of the sharing process as well as its management are missing. Hence, the purpose of this research is to improve the understanding and foster the prevalence of B2B sharing by answering the following research question: How does the process of resource sharing in B2B contexts unfold and which tools facilitate its management?

To achieve this, an action research strategy based on a multiple case study was applied. It was conducted within a newly formed research consortium consisting of researcher from two universities and a community of six sharing-willing Swiss SMEs from the industrial sector. All companies had initial experience in B2B resource sharing and expressed an interest in expanding and professionalizing this practice. During a period of almost two years, representatives of the SMEs actively participated in the research partnership, so that a total of five sharing transactions between them could be initiated and accompanied. Documentation of transactions allows the analysis of the sharing process across multiple cases, providing an evidence-based foundation for its generalization and the development of supportive tools.

The paper proceeds as follows: First, the methodology of the research project conducted, is described. This is followed by an analysis of the theoretical as well as practical findings and how they emerged from the three cycles of the action research case study. The paper

concludes by proposing a process model for resource sharing between companies and by outlining the implications of the findings for research and practice.

2. Research Methodology

In 2020, the action research project was initiated between a group of researchers and six Swiss industrial SMEs. The objective of the research project was twofold: Firstly, the companies involved were interested in benefitting from the advantages of B2B resource sharing, such as higher resource utilisation and access to new resources. Their past experience was narrated as ad hoc with little planning and strategic intent. Hence, they pursued the objective of achieving a more systematic conduct of resource sharing and collaborated to benefit from guidance within the project group. Conceptualising the B2B sharing process was the second objective, which targeted a contribution to academic knowledge. It aims for relevance to a broader context and theory building (Perry & Gummesson, 2004). To be able to simultaneously pursue both goals, an action research approach was chosen. Action research is a strategy of applied research that, according to Eden & Ackermann (2018), specifically generates theory from practice. Whereas it was traditionally applied in the field of societal action, it is now widely used in business and management (Shani & Coghlan, 2021). Here, action research has been acknowledged as a suitable approach for gaining a better understanding of complex processes within and between organisations (Gummesson, 2000). The perspective is one of “research in action”, rather than one “on or about action” and is appropriate when a series of actions in a given group are described (Coughlan & Coghlan, 2002). Action researcher actively interact with systems and data sources under study to solve practical problems while generating new research insights and contributing to academic knowledge (Gummesson, 2000). To do so, an incremental process is used (Eden & Huxham, 1996), which extends over several research cycles, stages or phases (Coughlan & Coghlan, 2002; Perry & Gummesson, 2004). While the number of cycles is not fixed, various authors refer to at least three (Coughlan & Coghlan, 2002; Street & Meister, 2004), which is also the case for the presented research. Prior to the first cycle, researchers conducted a literature review on the topic of B2B sharing, acquired participants for the sharing consortium and ran on-boarding interviews with candidates. Next, they held an initial meeting to enable mutual acquaintance and to propose a rough project outline as well as rules for cooperation. This is essential to achieve an aligned understanding of the context and the purpose of the research (Coughlan & Coghlan, 2002). Cycle I enabled the matching of resources and partners within

the project's company community. In cycle II, five sharing transactions were formed, implemented, accompanied, and documented. Cycle III aimed at assessing the sharing transactions as well as validating the overall findings of the project. In line with Coughlan & Coughlan (2002), each cycle consists of the same sequential steps, namely (1) the collection of data, (2) data analysis, (3) action planning, (4) implementation and (5) evaluation. In this process, the results of previous cycles serve as a basis for the following cycle.

With regard to the methods used in the implementation of action research projects, Erro-Garcés & Alfaro-Tanco (2020) refer to action research as a meta-methodology that employs a wide variety of methods. Coughlan and Coughlan (2002) even postulate that "all types of data gathering methods" are eligible (p. 225). Among others, Blichfeldt and Andersen (2006) specifically advocate case studies and Halecker (2015) uses the term "action case study" to name the research strategy employed by him. According to Yin (2009), the focus of case studies lies on the empirical analysis of holistic characteristics of real-life events including their context. They are hence especially suitable for investigating context-dependent, emerging phenomena, which have not previously been researched from a theoretical lens (Verleye, 2019). Given that this applies to B2B sharing, multi case studies deemed to be the appropriate method to be combined with the action research perspective.

The selection of the involved companies followed a purposive sampling. To ensure common resource use, all companies belong to the industrial sector and are based in Switzerland. Involved researchers contacted potential partners within their existing networks, introduced them to the idea of the research project and made sure that the companies already had some experience with B2B resource sharing. As collaborators within the research consortium, representatives from senior management were chosen. When interviews were undertaken, the collaborators switched to a participant role.

Since the five sharing transactions carried out between the collaborating companies represent sub-units of particular interest, which were investigated in-depth, we adopt an embedded case study design (Yin, 2009). In line with the literature, this approach proved relevant as the boundaries between sharing as the phenomenon of interest and the organisational context are not clear. All five sharing transactions are based on data gathered from different sources to ensure data triangulation (Fletcher et al., 2015). During the research, data was collected at two different levels: firstly, at the level of the sharing community and secondly, at the level of the sharing transaction, i.e., between the sharing partners involved in the five dyads. Data was collected in the form of 20 qualitative interviews, recording and documentation of six workshops, observation data from five sharing transactions between two

companies resulting in five case descriptions and four sets of questionnaires as feedback on the developed tools. All data was collected and analysed in written form. Interviews and meetings were recorded and transcribed for this purpose. Subsequently, the data was evaluated in a thematic analysis. This included two rounds of coding, which was carried out using MAXQDA software. One of the common challenges in action research is involving practitioners in the data analysis (Fletcher et al., 2015). To circumvent this problem, time-consuming coding was carried out by the researchers and the results were continuously validated by alternating company representatives. Emerging results were then reflected within the consortium. A summary of the data collection for all five cases along the cycles of the action research is given in the following table.

Cycle	Aims	Data Collection Level	Research Activities	Research Methods	Outcomes (Theory & Practice)
Pre-Step	Common understanding of context and purpose	Sharing Community	Literature review conducted through researchers; Acquisition of SMEs; Formation of sharing community; Introduction meeting and discussion of project context and rules of cooperation; Qualitative interviews on understanding of B2B sharing and previous sharing experience	Literature review; 10 qualitative interviews Thematic analysis	Theoretical Insight: Complexity of the internal sharing inventory, unclear internal responsibilities
Cycle I	Forming of sharing dyads through matching of resources and partners	Sharing Community	Data collection: Questionnaire to identify potential sharing resources; Half-day workshop to discuss resource and partner matching in clusters Data analysis: Comparison of questionnaires to identify resource clusters; Workshop data analysis to identify criteria for resource identification and Action planning: Planning of additional online matching workshop actively facilitated by researchers Implementation: Additional online workshop to facilitate identification of sharing resources; Building of 5 sharing dyads Evaluation: Critical mass of resource clusters was not reached during the initial matching workshop, as it proved more difficult than expected; Facilitation through researchers was necessary; Identification of resources along three power questions; Identification of sharing partner in accordance to shared resource and along two main dimensions	15 questionnaires; 1 On-site workshop with 15 company representatives 1 Online workshop	Theoretical Insight: Orchestration of activities prior to actual sharing at all three levels: organisation-internal, sharing dyad, sharing community Practical Insight: Tool 1: Resource identification Tool 2: Partner matching matrix = 5 sharing transactions between 6 SMEs
Cycle II	Executing sharing transactions	Sharing Dyads	Data collection: Accompanying of five sharing transactions including documentation of all communication; Evaluation of sharing transaction process during a semi-structured interview Data analysis: Writing of a case description as a basis for data analysis using a storytelling approach; Thematic coding of collected data Action planning: Development of a checklist as a basis for a sharing Implementation: Subsequent completion of the developed checklist Evaluation: Adjustment of the checklist in accordance with feedback from companies	Observation of 5 sharing transactions; 10 semi-structured interviews Thematic analysis leading to 5 case descriptions	Theoretical Insight: Governance varies greatly with resources shared and sharing partners Practical Insight: Tool 3: Sharing governance
Cycle III	Assessing sharing transactions and validating overall project results	Sharing Community	Data collection: Development of a sharing assessment checklist by drawing on a combination of all data collected throughout the research project; Application of the developed assessment tool by the involved SMEs; Weighting of the proposed items Data analysis: Evaluation of the completed assessment questionnaires and reduction of the items Action planning: Planning of two final workshops to validate 4 sharing tools and the overall sharing process description Implementation: Conduction of final workshops for 6 involved SMEs Evaluation: Deliberate dialogue to validate all four tools	10 assessment questionnaires 2 Workshops with overall 30 SMEs for tool validation	Theoretical Insight: Formalising three cyclical process phases Conceptualisation of the sharing process Practical Insight: Tool 4: Sharing assessment

3. Action Research Cycles and Findings

The activities carried out prior to the action research cycles, i.e., the literature review on and the “on-boarding” interviews with SME representatives concerning their prior experience and expectations, led to the following insights: firstly, the critical role of identifying suitable sharing resources internally in the sense of a resource inventory was established. Secondly,

the complexity of matching these resources with the resource demand or supply of potential partners as well as the variety of potential sharing transactions was revealed. It became evident that none of the existing company processes used e.g., for purchasing resources or resource quality control, served the needs of identifying appropriate sharing resources. The complexity of the task combined with the lack of clear internal responsibilities often stopped any initiative before it had even started. Similarly, when asked about the governance forms, it became evident that the expectations were greatly dependent upon the resources.

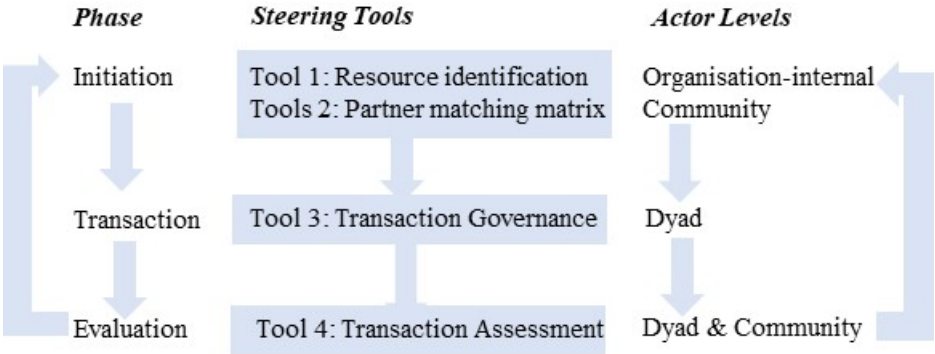
In this sense, *cycle I* focused upon the identification of resources for sharing as well as the formation of sharing dyads by matching partners and resources. During data collection, resource needs and possible resource offers of the participating companies were assessed firstly in written form with the help of a resource map. 15 SMEs returned questionnaires which were compared by the researchers to identify resource clusters. Secondly, during a half-day workshop, additional data was collected through observation of discussions within resource clusters. Collected data was analysed with the intend of matching supply and demand by one of the researchers. The data collected, showed little potential for resource sharing within the community, so that the researchers developed an action plan, which enabled the identification of additional sharing resources through an online matching workshop. Implementation consisted of the conduction of the workshop in which a researcher actively facilitated the matching of resources and partners by using the resource map to identify additional resource needs and offers. As a result, a total of five sharing transactions was detected, focussing on various resources, namely a forklift, marketing personnel, a 3D measuring machine, transportation services and welding. The evaluation of this cycle resulted in two tools: Tool 1 (resource identification) is used to identify shareable resources within a company. The tool does not follow an organisational structure logic (e.g., resources in logistics, human resources) but comprises power questions specific to sharing. They address e.g., the utilisation over time, the mobility, or the strategic importance of resources. At the sharing community level, Tool 2 (partner matching matrix) enables a company in the community of sharing-willing organisations to identify like-minded companies who have not only similar yet complementary resources but also similar expectations about the degree of formalisation of the sharing transactions within a community (e.g., intermediary-supported platform with full sharing services support to minimal, transaction-based self-organisation).

In *cycle II*, the actual sharing transactions were separately carried out between sharing partners. During data collection, the sharing dyads were accompanied from initiation through implementation. All points of contact such as emails and meetings were documented to gain a

better understanding of relevant aspects for the negotiation of a sharing agreement. Following each sharing transaction, these data were supplemented by semi-structured interviews with both company representatives to evaluate their sharing experience. Afterwards, a case description was prepared for data analysis using a storytelling approach. Data was analysed by two researchers to identify relevant aspects that contribute to the successful agreement and execution of sharing transactions between companies. Although the specific processing of the resource exchange varied greatly in terms of its degree of formalisation, the following six themes emerged at the dyadic transaction level and were captured in Tool 3 (sharing governance): initial situation for participating companies (including motivational drivers and feasibility), requirements for sharing (e.g., flexibility), financial aspects, processes and organisation, communication, resource-specific aspects (e.g., transportability). Here, the cross-case analysis of the five sharing transactions helped to abstract findings from the specific contexts and to achieve a more generic overall result.

Cycle III consisted of the evaluation of the sharing transactions as well as validating the overall findings of the project. Items for the sharing transaction assessment were proposed by the researchers based on findings from the literature (e.g. Kumar et al., 2018), previous research cycles to measure the satisfaction level of each participant along with various dimensions for the identification of future sharing potential. Data collection was carried out with the help of questionnaires. For each successful sharing transaction, both parties rated their experience against their original expectation along 14 items in four categories, namely business value, relationship to sharing partner, process management and additional value. Moreover, participants were asked to weigh the proposed items before returning the questionnaires to the researchers for data analysis and optimisation. This resulted in a collapsed list of 10 items, which were integrated into Tool 4, sharing assessment. This tool is mainly positioned at the dyad by evaluating the specific transaction, however, it is also relevant and used within the larger community because the members agreed on the value of the assessments for future transactions in the community. From a content perspective, B2B sharing assessment seems to take an interim position between sharing value in the C2C context (e.g., mutual agreements were kept (Gu et al., 2021)) and customer value assessments in B2B (e.g., through sharing I could optimise my processes (Govindan et al., 2020)). Cycle III also comprised the final validation of all project results, organised through two workshops for the involved SMEs. Here, not only the tools were once again validated, but, moreover, the structure of all activities into three iterative phases was agreed: Initiation, transaction, and evaluation. To further validate findings of action research, Fletcher et al. (2015) suggests a

process called deliberative dialogue, which was applied at the end of cycle III. All research findings in form of the generalized process to establish B2B sharing transactions including the tools developed, was presented to, and discussed with an independent group of 30 Swiss SMEs. They were asked to use the tools within a predefined sharing transaction. Their critical feedback helped to further abstract the findings into the overall project results, which meet the two research objectives: from the concrete situations of the five sharing cases a process model with three phases across three actor levels and four supportive steering tools for companies willing to share resources was generated (see figure 1).



4. Conclusion

4.1 Implications for research and practice

The observation and monitoring of the sharing consortium over a period of almost two years, as well as the implementation of the five sharing cases within the sharing dyads, provides a solid basis for understanding the B2B sharing process and its management. The subdivision of this process along phases, actor levels and activities captured in the four tools, is conducive to a closer examination of neuralgic points for B2B sharing and may further disguise and overcome the barriers to a wider prevalence. The flow of activities across these levels must be integrated in the overall sharing process since barriers at all three levels can block the proceed. This points at the complexity of well organised B2B sharing, which in turn could explain the moderate development compared with sharing among consumers.

This is one contribution among a growing number of articles (e.g., Chuah et al., 2021), to the emerging research field of B2B sharing that supports its establishment as a strong and unified field and allows it to grow beyond its previously neglected role in the sharing economy.

In times of resource scarcity, growing uncertainty along supply chains and increasing hyper competition, strengthening B2B sharing in practice can make a valuable contribution to better collaboration between companies as well as to greater resource efficiency.

4.2 Limitations

Action research pursues two goals in equal measure: solving practical problems and generating academic knowledge. To do so, a close collaboration between researchers and participants is established. This was the case within the sharing consortium within this research project. The commitment of the participants during the long-term project was exemplary. However, it should be noted that the involvement of practitioners in the data analysis proved to be difficult. This was mainly due to the high time commitment and the theory-heavy nature of the coding process. Consequently, the task was taken over by the research team, which influenced the results. To mitigate the one-sided perspective, repeated result validations by the practitioners were conducted.

A second issue that proved difficult during the project, matching resources and partners, is due to the size of the sample. Five resource sharing dyads were formed, but only through repeated attempts and active moderation by the researcher. Furthermore, a larger number of cases would be desirable to support the findings. The latter was addressed by further validating the results in the deliberate dialogue.

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