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The Explanatory Power of Reciprocal Behavior for the Inter-Organizational Exchange Context

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Abstract: In order to create sustainable competitive advantages, organizations are embedded in dyadic exchange relationships, which depend on the coordination of the behavior of the actors involved. Often, coordinated behavior is explained by trust. Since trust develops in a process of reciprocal responses to presumed trustworthy behavior, it is a reciprocity-based concept. While inter-organizational exchange relationships can appear in different stages (forming, establishing, broken), different reciprocity types (direct, indirect, negative) can be distinguished. The study links reciprocal behavior to different stages of inter-organizational exchange relationships in order to investigate reciprocity as a possible coordination mechanism of behavior and thus explore the basis of coordination of trust-based behavior. Qualitative Comparative Analysis as a set-theoretic approach is applied to analyze the empirical data consisting of 78 qualitative semi-structured interviews with managers of small-, medium- and large-sized companies. The results show that different reciprocity types become effective in different stages of an inter-organizational exchange relationship: For forming inter-organizational exchange relationships indirect reciprocal behavior, besides direct reciprocity, becomes effective while in establishing inter-organizational exchange relationships, direct reciprocal behavior is evident. Negative reciprocal behavior leads to a break up of relationships. Using these results, on the one hand, the concept of trust can be sharpened by deepening the understanding of the trust-building mechanisms and on the other hand, reciprocity can be seen as coordination mechanism in exchange relationships of different stages. In doing so, with this knowledge, relationships can be coordinated towards a long-term orientation in order to create sustainable advantages.

Keywords: coordinating behavior; trust management; reciprocity types; reciprocity-based trust; inter-organizational exchange relationships; sustainable relationships

1. Introduction

Organizations are relied on the access to resources to be competitive and thus it is necessary for them to enter into inter-organizational relationships in order to obtain these resources [1]. A sustainable competitive advantage can be created by partners seeking long-term relationships [1,2]. Since dyadic, inter-organizational exchange relationships involve two actors to achieve the objectives, the behavior of the actors involved must be coordinated [3]. Coordinated behavior is often explained by trust, which is a crucial factor for the relational dimensions of an organization [4]. While three types of trust (instrumental, maxim-based, norm-based) can be distinguished (e.g., [5–7]), the explanation of the emergence of trust is essentially eliminated. In general, trust and (exchange) relationships are reciprocal. Reciprocity is a mechanism that underlies the concept of trust. Thus, reciprocity is seen as a condition for the emergence of trust. To understand the effectiveness of reciprocity-based trust in inter-organizational exchange relationships, the underlying principle of reciprocity needs to be investigated. Reciprocity as a social preference [8,9] strives for symmetry in a relationship, thereby pursuing a balance between actors involved. Reciprocity as a universal principle formulates exchange

theoretical considerations [10–12] and has a stabilizing effect in systems [13,14]. It can be distinguished in many different types, which can be reduced to three main reciprocity types: direct, indirect and negative [15,16]. While direct and indirect reciprocity indicate a positive exchange of values, negative reciprocity is a one-sided and therefore negative exchange in which one actor takes a benefit without returning an equal gift [17–19].

Regarding the coordination of behavior in inter-organizational exchange relationships, it seems necessary to distinguish between different stages of the relationship [18]. It can be assumed that for different stages of an inter-organizational exchange relationship different coordination mechanisms become effective (e.g., [18]). By regarding different stages, a focused consideration can be made of individual phases in which the coordination of the behavior of the actors involved is relevant through the influence of reciprocal actions. Mainly three stages are distinguished in this study [18]: The formative stage, the established stage and the broken stage of an inter-organizational exchange relationship between two organizations. While the formative stage is about building a relationship and actors involved approaching each other, the established stage indicates an (long-term) existing relationship in which the actors involved interact on a regularly basis. The broken stage displays the end where one of the actors has broken up the relationship.

Regarding the coordination of the behavior in inter-organizational exchange relationships, a contextualization is needed: So far, a particular contextualization of behavioral coordination by reciprocity, respectively of reciprocity-based trust with a specific exchange context does not exist in the literature. Taking these two empirical and theoretical ideas (inter-organizational exchange relationships and reciprocity) into account regarding coordination of behavior, the following research questions are addressed: Which reciprocity types can be causal conditions in different dyadic, inter-organizational exchange relationship stages? Which reciprocity types as a condition lead to which inter-organizational exchange relationship as an outcome?

To answer the research questions, a crisp qualitative comparative analysis (QCA) following Ragin is conducted because QCA as a set-theoretic approach regards empirical cases as outcomes and (combinations of) conditions that lead to an outcome in order to examine the relationship between an outcome and the possible causal conditions. Implementing a set-theoretic approach allows for analyzing a large amount of qualitative data. In doing so, QCA is a way to combine quantitative, variable-oriented elements with qualitative, case-oriented elements. By using this approach, diversity-orientated research is enabled. QCA offers the advantage of finding different combinations of causal conditions.

By answering the research questions, it is expected that the understanding of reciprocal behavior in specific exchange contexts may help in sharpening the concept of trust. Since trust can be a determining aspect of long-term relationships which advantage partners to be sustainable competitive, the understanding of reciprocity can possibly help to coordinate consciously established (long-term) relationships. Furthermore, a theoretical and empirical justification of the special value of reciprocity, for a specific exchange context is expected. It can be assumed that the study contributes to the theoretical concept being empirically relevant and thus it is expected that practitioners can act according to the results in managing their inter-organizational relationships.

The paper is organized as follows: Firstly, reciprocity-based trust is viewed according to the potential of coordinating dyadic, inter-organizational exchange relationships. Reciprocity as a basis for trust is discussed and different types of reciprocity besides different stages of inter-organizational relationships are analyzed. Secondly, the method and the used materials are introduced and explained. Subsequently, the results of the QCA are presented and discussed showing limitations, contributions and possibilities for future research.

2. Coordinating Behavior in Inter-Organizational Exchange Relations by Reciprocity-Based Trust

So as to operate sustainably in the market, organizations depend on certain resources. Access to these resources is crucial for organizations since they represent a sustainable competitive advantage. One way to obtain resources that cannot be produced by the organization itself is to engage

inter-organizational exchange relationships [20]. The actors involved agree to coordinate their behavior by entering into an inter-organizational exchange relationship and therefore coordinated behavior leads to a restriction of one's own behavior. In addition, by entering into an inter-organizational exchange relationship, the future of one's own organization depends on the future of the partner organization. Thus, inter-organizational relationships and coordinated behavior can be risky if the partner forgoes the sustainable, long-term nature of a relationship in favor of short-term benefits [21]. To reduce such opportunistic behavior trust can be seen as a coordination mechanism [5,22] (in addition to market mechanism [5] and hierarchical governance [5,23]). Relationships can be largely sustainable when the relationship is based on trust because these relationships are established over a long period of time with the expectation of continuity [1]. As a consequence trust is a connection to relationships in business [24]. Furthermore, trust can be seen as basic component of social processes [25,26], which is based on reciprocal behavior [22]. Since trust is often seen as a crucial condition for establishing organizations [27] this view is transferable to exchange relationships between two organizations. Trust not only facilitates processes within an organization but also the functioning of relationships outside the organizations' own borders. Trust in an inter-organizational context enables and facilitates the implementation of long-term (an in this sense sustainable) exchange relationships between two organizations [27]. Since long-term, sustainable relationships are characterized by a certain stability, trust can be seen as promoting stability in this context. This stability allows the actors involved to assess the behavior of the partner through experience and makes the behavior to a certain extent predictable [28]. Mutual expectations indicate reciprocal behavior. Understanding reciprocity as the basis of trust is important for understanding trust itself. An action creates reciprocal expectations in the counterpart or in a group that is involved in some way. These reciprocal expectations can influence the behavior of the actors involved. Thus, reciprocity can be an opportunity to coordinate behavior and thereby produce trust.

Reciprocity in general is a theoretical concept that formulates exchange-theoretical considerations. The underlying motive of individual action is the maximization of rewards as well as the minimization of costs. Thus, reciprocal relationships seek to balance costs and benefits [11,13,29]. Many different reciprocity types are mentioned in the literature [16], which can subsequently be grouped into three basic types [15,16]: (positive) direct, (positive) indirect and negative. Direct reciprocity is the basic principle of positive, immediate exchange of equivalent values between two actors. By giving the first gift, a concrete expectation arises from the other actor [25,30]. Indirect reciprocity is the basic principle of positive, indefinite future exchange of non-equivalent values in an exchange network [17,31]. The first gift creates vague expectations [32]. Negative reciprocity indicates a negative, one-way exchange of values. There is no equivalent gift in return and values only go in one direction to an actor and the counterpart does not receive anything in return [19,33].

Inter-organizational exchange relationships can be viewed in a life circle through which the relationship goes through different stages [18,34,35]. Thereby three main phases can be distinguished: formation of a relationship, established relationships and broken relationships.

In the formation stage, the actors involved approach and express an interest of forming a long-term and thus sustainable inter-organizational exchange relationship. Initially, irregular exchanges take place. In this phase, commitment is negotiated. The relationship is initiated [18]. If the inter-organizational exchange relationship reaches an established stage, regular exchanges and cooperation takes place. Established inter-organizational exchange relationships represent a sustainable form of relationship between organizations. Exchanges within the relationship are established over a longer period of time. Relationships with long-term orientation and thus, with the expectation of continuity and future interactions aim to maximize profits over a period of time. The long-term orientation of a relationship is determined by the extent to which the partners trust each other [36]. During this phase, the relationship, as an alliance, can grow [18,35,37]. In the stage in which relationships are broken, actors are involved in conflicts thus, exchanges do not occur anymore [18]. Regardless of how long the relationship has lasted, the exchange relationship broke.

It can be assumed, since there are different stages of inter-organizational exchange relationships, that different reciprocity types become effective as coordinating mechanism in the different stages of exchange relationships. It is expected that direct reciprocal behavior is important in the forming process of an inter-organizational exchange relationship, since directly exchanging gifts and benefits promote the initiation of a relationship. Furthermore, it is expected that indirect reciprocal behavior establishes an inter-organizational relationship. Actors in an inter-organizational relationship have known each other for some time, work together constantly and can adjust their expectations according to their experience with the exchange partner. Finally, negative reciprocity is expected to lead to a breakup of the relationship, since the failure to return a previously given gift is considered to be uncooperative.

3. Qualitative Comparative Analysis—Research Method

To address the research gap and thus answering the research question, a crisp-set Qualitative Comparative Analyses (QCA) is conducted [38]. QCA, as a method that combines qualitative and quantitative logic, helps to answer the research question since a high number of qualitative data can be analyzed by implementing a set theoretic approach. QCA, developed by Charles C. Ragin, as a diversity-orientated research combines quantitative, variable-oriented elements with qualitative case-oriented elements and is based on set theory. The qualitative cases are considered as combinations that are specified by their characteristic values. The basis of QCA is built upon qualitative data that is iteratively analyzed. Data is examined regarding its membership in sets so the considered outcome can be explained as the event of different combinations of conditions. The goal of a QCA is to extract the conditions that are necessary and/or sufficient for an outcome. A necessary condition (X) occurs in each case in which the outcome (Y) is present, but the condition does not have to result in the outcome (see Figure 1a). A sufficient condition (X) leads to the outcome (Y) for every present case but it is not important whether the outcome can occur without the condition (see Figure 1b).

(a)　　　　　　　　　　　　　　　　　　　　　　**(b)**

Figure 1. A 2 × 2 table for: (**a**) necessary conditions and (**b**) sufficient conditions [39].

In set theory, conditions and outcomes are seen as subsets and supersets. Regarding cases with necessary conditions, the outcome (Y) is a subset of the condition (X). Whenever Y is present, X is present, too (see Figure 2a). Regarding cases with sufficient conditions, the outcome (Y) is a superset of the condition (X). Whenever X is present, Y is present as well (see Figure 2b).
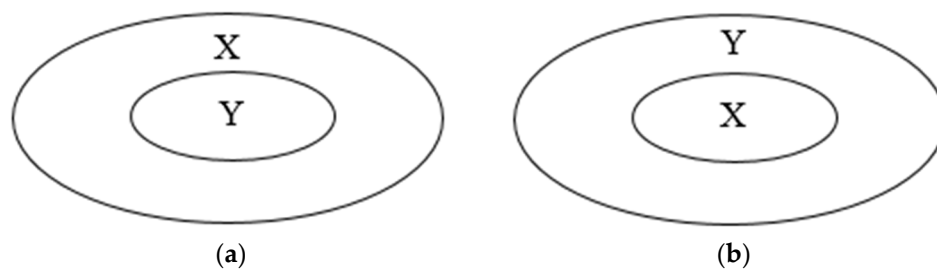
Figure 2. Venn diagram for: (**a**) necessary conditions and (**b**) sufficient conditions [39].

QCA is based on Boolean algebra, which is an approach allowing maximum causal complexity to avoid assuming in a simplifying manner about cases from the outset. The case-oriented approach addresses different causal combinations, which are relevant to outcomes and thus cases relative to different causal paths can be investigated [40]. Analyzing cases, conditions can be present/true (1) or absent/false (0). The data is represented as a truth table (as raw matrix), providing information about the absence and presence of outcomes and conditions. With that information, the data can be sorted into the different combinations. Thus, the different combinations of conditions and their corresponding outcome are summarized in the truth table [40]. By using the set theoretic approach shown, the reciprocity types (as conditions) can be combined with the inter-organizational exchange relationship context (as outcome). Thus, possible conditions are: direct reciprocity, indirect reciprocity, negative reciprocity. Investigated outcomes are: formation of inter-organizational exchange relationships, established inter-organizational exchange relationships, broken inter-organizational exchange relationships.

The data collection contains qualitative, semi-structured interviews with 78 enterprises (small-, medium- and large-sized organizations) from Germany and Austria. In the context of qualitative survey methods, this number is quite large. The number of interviews was chosen in order to cover the diverse and heterogenic business landscape. The 78 qualitative semi-structured interviews with responsible persons from each organization were analyzed in terms of reciprocity type and inter-organizational exchange relationship in which the reciprocal behavior occurs. The focus of the exchange context was on dyadic relationships.

Since the basis of a QCA is a truth table, the analyzed cases were then transferred into such a table. For each exchange context (formation, established, broken), as the outcome mentioned in the interviews one truth table was generated (see Appendix A: Table A1 for formation of inter-organizational exchange relationships, Table A2 for established inter-organizational exchange relationships, Table A3 for broken inter-organizational exchange relationships). The presence, or absence of the outcome and the conditions for each of the 78 cases was listed with "1" respectively "0". Thus, the reciprocity types as conditions were linked to the exchange context as an outcome. Subsequently the three truth tables were analyzed regarding the combination of conditions that lead to the outcome. Each combination that led to an outcome was recorded as a Boolean expression (see Section 4). Thus, necessary and sufficient conditions for each outcome could be analyzed using *fsqca software* [41]. By analyzing necessary and sufficient conditions for an outcome, statements about the relevance of a condition for an outcome can be made.

4. Identifying Conditions for Inter-Organizational Exchange Relationships—Research Results

Since QCA is based on a truth table, the following section shows the three different truth tables transferred in this study. Each inter-organizational exchange relationship (formation, established, broken) is shown as one outcome of the different conditions combined (direct reciprocity, indirect reciprocity, negative reciprocity).

4.1. Truth Tables

The truth table below (Table 1) represents the empirical cases for the outcome formation of an inter-organizational exchange relationship. Conditions of this outcome can be: direct reciprocity, indirect reciprocity and negative reciprocity.

As shown in Table 1, there are three combinations of conditions that lead to the outcome (in the sense of the Quine McClusky algorithm):

$$Abc + aBc + ABc \rightarrow \text{Outcome (Y)}$$

A/B/C represent the conditions that are present. a/b/c represent the conditions that are absent. '+' is a Boolean operator for logical "or".

Table 1. Combination of condition for the outcome "formation" shown in the empirical data.

Exchange Relationship	Conditions: Types of Reciprocity			Number of Instances
Y (formation)	A (direct)	B (indirect)	C (negative)	
1	1	0	0	8
1	0	1	0	6
1	1	1	0	4
0	0	0	0	60

"1" indicates the presence, "0" the absence of a condition/outcome.

The equation above represents for which combinations of conditions the outcome is present: If direct reciprocity is present and indirect and negative reciprocity are absent, the outcome is present (Abc). 8 empirical cases out of 78 show this combination. If indirect reciprocity is present and direct and negative reciprocity are absent, the outcome is present (aBc). 6 empirical cases out of 78 indicate this combination. If direct and indirect reciprocity are present and negative reciprocity is absent, the outcome is present (ABc). 4 empirical cases show this combination. If all conditions are absent (abc), the outcome is also absent.

The Quine McClusky algorithm above shows the possible combination of conditions for the outcome being present. Thus, the empirical data did not indicate some combinations. These logical remainders are as follows:

$$AbC + abC + aBC + ABC + abc \rightarrow \text{Outcome (Y)}$$

In general, there are different causes for these logical remainders: (1) The combination does not appear in the empirical data and cannot logically appear. (2) The combination does not appear in the empirical data but could logically appear. (3) The combination appears empirically but was not recorded by the survey [42]. In the case of forming an inter-organizational exchange relationship, all combinations which have the condition *negative reciprocity* as being present (AbC, abC, aBC, ABC), are not logical as an outcome. In a theoretic logical sense, negative reciprocal behavior prevents the forming of a relationship because an unbalanced exchange does not show cooperative behavior. The combination direct reciprocity, indirect reciprocity and negative reciprocity being absent (abc) is a logical remainder because it cannot logically appear. If no reciprocal behavior is present, there is no exchange relationship, which cannot lead to the forming of a relationship.

Table 2 shows the truth table for the outcome *established inter-organizational exchange relationship*. Conditions for this outcome can be: direct reciprocity, indirect reciprocity and negative reciprocity.

Table 2. Combination of condition for the outcome "established" shown in the empirical data.

Exchange Relationship	Conditions: Types of Reciprocity			Number of Instances
Y (established)	A (direct)	B (indirect)	C (negative)	
1	1	0	0	27
1	0	1	0	24
1	1	1	0	17
1	1	1	1	2
0	0	0	0	8

"1" indicates the presence, "0" the absence of a condition/outcome.

Four combinations of conditions lead to this outcome (in the sense of the Quine McClusky algorithm):

$$Abc + aBc + ABc + ABC \rightarrow \text{Outcome (Y)}$$

Direct reciprocity being present while indirect and negative reciprocity are absent (Abc) lead to the outcome being present. 27 empirical cases out of 78 indicate this combination. The same applies for indirect reciprocity: indirect reciprocity being present while direct and negative reciprocity are absent (aBc) lead to the outcome being present. 24 empirical cases of 78 show this combination. If direct reciprocity and indirect reciprocity are present, while negative reciprocity is absent, the outcome is present (ABc). 17 empirical cases of 78 show this combination. All three conditions (direct, indirect and negative reciprocity) being present can lead to this outcome as well (ABC). In 2 out of 78 empirical cases, that combination of conditions was identified. If all conditions are absent (abc), the outcome is absent as well, which was identified in 8 empirical cases.

The logical remainders for the above shown outcome of established exchange relations are as follows:

$$abc + abC + AbC + aBC \rightarrow \text{Outcome (Y)}$$

Combinations with neither direct nor indirect reciprocity being present (abc, abC) cannot be a logical outcome for *established exchange relationship*. It can be assumed that some kind of positive reciprocal behavior is needed in established exchange relationships for them to be permanent. Negative reciprocity being present while direct or indirect reciprocity are present (AbC, aBC) could logically appear but does not appear in the empirical data.

Table 3 shows the truth table for the outcome *broken inter-organizational exchange relationship*. Analyzed conditions for this outcome are: direct reciprocity, indirect reciprocity and negative reciprocity.

Table 3. Combination of condition for the outcome "broken" shown in the empirical data.

Exchange Relationship	Conditions: Types of Reciprocity			Number of Instances
Y (broken)	A (direct)	B (indirect)	C (negative)	
1	0	0	1	57
1	1	0	1	3
0	0	0	0	18

"1" indicates the presence, "0" the absence of a condition/outcome.

Two combinations of conditions lead to this outcome (in the sense of the Quine McClusky algorithm):

$$abC + AbC \rightarrow \text{Outcome (Y)}$$

If direct and indirect reciprocity are absent and negative reciprocity is present, the outcome is present (abC). 57 empirical cases out of 78 show this combination. Direct reciprocity being present while negative reciprocity is present and indirect reciprocity is absent leads to this outcome as well (AbC). In 3 out of 78 empirical cases this combination of conditions was identified. If all conditions are absent (abc), the outcome is absent, too.

The logical remainders for the outcome *broken inter-organizational exchange relationship* are as follows:

$$Abc + ABC + aBC + aBc + abc + ABc \rightarrow Outcome\ (Y)$$

All combinations with negative reciprocity not being present (Abc, aBc, abc, ABc) cannot appear logically, since negative reciprocal behavior is needed for the breakup of a relation. For the left logical remainders, which are combinations with indirect reciprocity being present (ABC, aBC), it is not possible to appear in a logical sense. Indirect reciprocal behavior that is established over a time period contradicts the breakup of a relationship regarding the time aspect.

4.2. Analysis of Conditions

As shown in Section 3, the focus of the QCA is on the analysis of necessary and sufficient conditions that lead to an outcome. If a condition occurs in each empirical case in which the outcome is present, this condition is necessary. It is not permitted for necessary conditions that the outcome is present without the condition being present. Otherwise, the condition does not have to result in the outcome. A condition is sufficient if it leads to the outcome for every present case. If the condition is present but does not result in the outcome it cannot be sufficient [42].

The following sections show the analysis of the conditions for each inter-organizational exchange context.

4.2.1. Conditions for Outcome Formation of an Inter-Organizational Exchange Relationship

Direct, indirect and negative reciprocity (A, B, C) are not necessary conditions for the outcome since the outcome is present when A or B or C are absent. Direct or indirect reciprocity (A, B) are sufficient conditions for the formation process of an inter-organizational exchange relationship. If A and/or B occur the outcome is present. The results of the analyses with *fsqca* [41] emphasize the first analysis of the truth table:

The subset/superset analysis shown in Table 4 provides scores of consistency and coverage for (combinations of) conditions. Consistency and coverage of a condition provide a way to examine whether a condition is sufficient.

Table 4. Subset/superset analysis for outcome formation (Consistency indicates how many empirical cases are correctly described by the (combinations) of conditions. Coverage measures the degree to which an outcome is covered (or explained) by each (combination) of condition.).

	Consistency	Raw Coverage
direct * indirect * ~negative (Abc)	1.000000	0.210526
Indirect * ~negative (Bc)	1.000000	0.526316
direct * ~negative (Ac)	1.000000	0.631579
direct * indirect (AB)	1.000000	0.210526
~negative (c)	0.243590	1.000000
indirect (B)	1.000000	0.526316
direct (A)	1.000000	0.631579

* is logically for 'and', ~stands for 'absent'.

The value of 1.0 regarding consistency indicates that all empirical cases are correctly described by the condition A or B (direct or indirect reciprocity). The conditions are each a subset to the outcome (formation of inter-organizational exchange relationship) since whenever the outcome is present, the conditions A or B are also present and thus direct respectively indirect reciprocity are sufficient conditions for the outcome (se Figure 2b). The coverage shows the empirical relevance, what means the extent to which the findings are valid to the empirical data. Direct reciprocity (A) has a coverage value of 0.631579. Hence, 63% of the empirical data can be explained by that condition consistently with the truth table. Summarized, the data are consistent with the argument that the outcome is a superset of A

(direct reciprocity which is according to this a subset of the outcome) and its coverage of the outcome is 63%. That is, the condition A accounts for 63% of the sum of the membership in the outcome and thus A is a sufficient condition for the outcome. The empirical data are also consistent with the argument that B (indirect reciprocity) is a sufficient condition for the outcome. Indirect reciprocity (B) with a coverage value of 0.526316 explains 53% of the outcome in the empirical data. That is, the condition B accounts for 53% of the sum of the membership in the outcome indicating that the outcome is a superset of B, respectively B is a subset of the outcome (see Figure 2b). The combination of A or B present (A + B) is a necessary condition for the outcome, this means that the outcome is a subset of the combination of the conditions. The truth table shows that it is necessary that either direct or indirect reciprocity are present for the outcome being present meaning that there is no empirical case with the outcome present without A or B being present. In 100% of the empirical cases negative reciprocity (C) was absent while the outcome was present. Thus, empirical data do not indicate negative reciprocity as a condition for the formation of inter-organizational exchange relationships.

4.2.2. Conditions for Outcome Established Inter-Organizational Exchange Relationship

The conditions A, B and C are not necessary for the outcome *established inter-organizational exchange relationship*. The outcome is present even if A or B or C are absent. A (direct reciprocity) and B (indirect reciprocity) are sufficient conditions for established inter-organizational exchange relationships. When A and/or B are present, the outcome is present as well. Table 5 shows the results of *fsqca*:

Table 5. Subset/superset analysis for outcome established.

	Consistency	Raw Coverage
direct * indirect * negative (ABC)	1.000000	0.028571
indirect * negative (BC)	1.000000	0.028571
direct * negative (AC)	1.000000	0.028571
direct * indirect (AB)	1.000000	0.271429
indirect (B)	1.000000	0.614286
negative (C)	1.000000	0.028571
direct (A)	1.000000	0.657143

* is logically for 'and'.

Regarding consistency, the value of 1.0 indicates that all empirical cases in the truth table are correctly described by the conditions A or B (direct or indirect reciprocity). The conditions are each a subset to the outcome (established inter-organizational exchange relationship) and thus sufficient conditions for the outcome meaning that whenever the outcome is present, the conditions A or B are present as well (see Figure 2b). The extent to which condition A (direct reciprocity) is valid to the empirical data is indicated by the coverage value of 0.657143. Condition A accounts for 66% of the sum of the membership in the outcome indicating that A is a subset of the outcome (see Figure 2b). Hence, 66% of the empirical data are described as consistent in the truth table. Summarized, the data are consistent with the argument that the outcome is a superset and thus, condition A is a sufficient condition for the outcome. Moreover, the empirical data are also consistent with the argument that condition B (indirect reciprocity) is a sufficient condition for the outcome and thus a subset of the outcome (see Figure 2b). Indirect reciprocity (condition B) with a coverage value of 0.614286 explains 61% of the outcome in the empirical data. B (as a subset) accounts for 61% of the sum of the membership in the outcome. Thus, condition B is a sufficient condition for the outcome. Negative reciprocity was barely found in the empirical data.

4.2.3. Conditions for Outcome Broken Inter-Organizational Exchange Relationship

The condition C (negative reciprocity) is a necessary condition for the outcome *broken inter-organizational exchange relationship*. For each case in which the outcome is present, condition

C is also present. In addition, condition C is sufficient for the outcome. Whenever C is present, the outcome is present. The conditions A and B are neither necessary nor sufficient for the outcome. Table 6 shows the results of *fsqca*:

Table 6. Subset/superset analysis for outcome broken.

	Consistency	Raw Coverage
direct * ~indirect * negative (AbC)	1.000000	0.050000
~indirect * negative (bC)	1.000000	1.000000
direct * ~indirect (Ab)	1.000000	0.050000
direct * negative (AC)	1.000000	0.050000
~indirect (b)	0.769231	1.000000
negative (C)	1.000000	1.000000
direct (A)	1.000000	0.050000

* is logically for 'and', ~stands for 'absent'.

Regarding consistency, the value of 1.0 indicates that all empirical cases in the truth table are correctly described by the condition (negative reciprocity). Condition C is a superset of the outcome (broken inter-organizational exchange relationship) and thus a necessary condition for the outcome (see Figure 2a). Condition C has a consistency value of 1.0 which means it accounts for 100% of the sum of the membership in the outcome. Hence, 100% of the empirical data is described as consistent in the truth table which indicates that the data are consistent with the argument that the outcome is a subset of the condition and thus condition C is a necessary condition for the outcome. There is no empirical case with the condition present without the outcome being present. Moreover, C is a sufficient condition for the outcome: C leads to the outcome for every present case. Direct reciprocity was barely found in the empirical data.

5. Discussion and Conclusions

The results show that direct (A) and indirect (B) reciprocity are sufficient but not necessary conditions for the outcomes *formation of an inter-organizational exchange relationship* and *established inter-organizational exchange relationship*. Negative reciprocity (C) is a necessary and sufficient condition for the outcome *broken inter-organizational exchange relationship*.

Analyzing the results for inter-organizational exchange relationships that are in a formation process, it becomes clear that, since direct reciprocity is a sufficient condition for the formation of an inter-organizational exchange relationship, as expected, direct reciprocal behavior helps in forming a relationship between two organizations. Surprisingly, indirect reciprocal behavior also contributes to the formation process of a relationship. In summary, direct reciprocity, indirect reciprocity or a combination of both (A + B) is needed to form an inter-organizational exchange relationship. For organizations, it is therefore important that reciprocal action in form of an exchange takes place, regardless of whether it takes place at the same time (direct reciprocity) or with a time delay (indirect reciprocity) [17]. Furthermore, equivalence of gifts does not play a big role in the forming process of a relationship. It is rather fundamental that someday consideration is provided, in any form, in order to build a sustainable long-term relationship between the two actors [31]. The results also show that negative reciprocal behavior is not suitable to form a relationship. Since negative reciprocity means a one-way exchange in favor of one actor [19], this type of reciprocity has no meaning in forming relationships. Empirical data shows that relationships are not formed without direct or indirect reciprocal behavior: all empirical cases with formation of relationships as outcome being present have as conditions direct and/or indirect reciprocal behavior. This emphasizes the relevance of these two reciprocity types in this stage of a relationship.

The situation is similar for established inter-organizational exchange relationships. Direct and/or indirect reciprocal behavior (being sufficient conditions) help established relationships to function. In

established relationships, however, negative reciprocity tends to be overlooked. It can be assumed that long-term relationships are not broken up due to one-off negative behavior. Especially in established relationships, indirect reciprocal behavior becomes effective. Actors who are involved in a long-term relationship have known each other for a certain period of time and can therefore anticipate the behavior of the other actor. Their experience allows them to assess if their expectations are met. The empirical data shows no case of established inter-organizational exchange relationships without the conditions direct and/or indirect reciprocity. Again, this underlines the relevance of these two reciprocity types in this stage of a relationship.

Negative reciprocal behavior leads, in all empirical cases, to a broken inter-organizational exchange relationship. In an economic exchange context, negative behavior is punished [33]. Since organizations must act in the sense of their economic efficiency, they would be damaged by negative reciprocal behavior of the other actor. Since this behavior is incompatible with a cooperative attitude, in which an exchange relationship was entered, this leads to the break-up of the relationship.

Regarding the emergence of trust in an inter-organizational context, indirect reciprocity is of particular importance [32]. In the sense of indirect reciprocity, an actor acts in advance without knowing whether there will be a return. This act can be considered trustworthy by the other actor and thus paves the way for a long-term and thus sustainable (established) relationship this gives the partners sustainable competitive advantages. In addition, direct reciprocal behavior is crucial to build trust. If expectations are adhered to immediately and a balance is established in the exchange relationship, this serves as the basis for the behavioral assessment of the counterpart.

Empirical data also shows that organizations tend to pursue long-term relationships. Transforming single exchanges into a long-term exchange relationship, they can be viewed as sustainable relationships for the organization [37]. According to the empirical data, transformation reciprocal behavior is needed for this to occur.

The study presented and its results contribute to research and practice: By examining reciprocity in an inter-organizational exchange context, it is possible to gain insight into the different reciprocity types in different stages of inter-organizational relationships. Taking into account that reciprocity can be seen as the basis of trust building [22], the knowledge generated contributes to the fundamental sharpening of the concept of trust. In addition, the article provides a theoretical and empirical justification for the particular relevance of reciprocity for forming, establishing and breaking up inter-organizational relationships and thus, for building trust between actors involved. The results also show that the theoretical concept is empirically relevant. Respondents from practice articulate the theoretical construct, suggesting its presence in their thinking. Furthermore, practitioners can use the knowledge generated in this study to consciously navigate a phase of a relationship and thus use it as a coordination mechanism in relationship management [3]. Since long-term (established) relationships have advantages regarding the sustainable competitiveness of an enterprise, managers can use the knowledge offered in this study to consciously coordinate their inter-organizational exchange relationship towards a long-term orientation in order to benefit from these advantages.

The article is subject to the following limitations: Because of the method used, other mechanisms that might be effective in a stage of a relationship have been hidden. This can be justified by the fact that specifically reciprocity was examined in regard to coordinating stages of a relationship and thus building trust. The focus on reciprocity was chosen in order to gain insights into reciprocal behavior in inter-organizational exchange context and related trust building. Although for this study a relatively high number of qualitative observations was used, compared to other approaches the empirical data is limited. In addition, empirical cases were not randomly sampled which limits the results of the study but a randomization is not required for the application of the method. The scope of the results is thus limited. The explanatory power is therefore limited to the context (p.ex. culture) of the cases investigated (especially with regard to heterogeneous cultural areas [27], the transferability of the results may be limited, since reciprocal behavior is embedded in a cultural framework).

Future research can build on the results: in further studies exchange relationships could be examined with regard to size differences. For example, it could be investigated whether relationships between different organization sizes are based on other reciprocity types. In addition, further research may deal with the sharpening of the concept of trust: the emergence of trust can be further explored based on the results from an exchange theory perspective. Moreover, future research can build on existing work regarding methodological approach [43,44] regarding measurement of reciprocity of (different types of) relationships in order to make the findings more generalizable by conducting statistical survey studies.

Conflicts of Interest: The author declares no conflicts of interest.

Appendix A

Table A1. Truth table of outcome "formation of relationship". (The background colors highlight the presence of the different exchange relations and reciprocity types.)

Case	Exchange Relation	Reciprocity		
		A	B	C
	formation	direct	indirect	negative
A01	0	0	0	0
A02	0	0	0	0
A03	1	1	0	0
A04	0	0	0	0
A05	0	0	0	0
A06	0	0	0	0
A07	1	1	0	0
A08	0	0	0	0
A09	1	1	0	0
A10	0	0	0	0
A11	0	0	0	0
A12	0	0	0	0
A13	1	1	0	0
A14	1	0	1	0
A15	0	0	0	0
A16	0	0	0	0
A17	0	0	0	0
A18	0	0	0	0
A19	0	0	0	0
A20	0	0	0	0
A21	1	1	1	0
A22	0	0	0	0
A23	0	0	0	0
B01	0	0	0	0
B02	0	0	0	0
B03	0	0	0	0
B04	1	1	0	0
B05	0	0	0	0
B06	0	0	0	0
B07	0	0	0	0
B08	0	0	0	0
B09	0	0	0	0
B10	0	0	0	0
B11	0	0	0	0
B12	1	1	1	0
B13	0	0	0	0

Table A1. *Cont.*

Case	Exchange Relation	Reciprocity		
		A	B	C
	formation	direct	indirect	negative
C01	0	0	0	0
C02	0	0	0	0
C03	1	1	0	0
C04	0	0	0	0
C05	0	0	0	0
C06	0	0	0	0
C07	0	0	0	0
C08	0	0	0	0
C09	0	0	0	0
C10	0	0	0	0
C11	1	0	1	0
C12	0	0	0	0
C13	0	0	0	0
C14	0	0	0	0
C15	0	0	0	0
C16	1	0	1	0
D01	1	0	1	0
D02	0	0	0	0
D03	0	0	0	0
D04	0	0	0	0
D05	0	0	0	0
D06	1	0	1	0
D07	1	1	1	0
D08	1	1	0	0
D09	0	0	0	0
D10	1	1	0	0
D11	0	0	0	0
D12	0	0	0	0
D13	1	0	1	0
E01	0	0	0	0
E02	0	0	0	0
E03	0	0	0	0
E04	0	0	0	0
E05	1	1	1	0
E06	0	0	0	0
E07	0	0	0	0
E08	0	0	0	0
E09	0	0	0	0
E10	0	0	0	0
E11	0	0	0	0
E12	0	0	0	0
E13	0	0	0	0
	18	12	10	0

"1" indicates the presence, "0" the absence of a condition/outcome.

Table A2. Truth table of outcome "established relationship". (The background colors highlight the presence of the different exchange relations and reciprocity types.)

Case	Exchange Relation	Reciprocity		
		A	B	C
	established	direct	indirect	negative
A01	0	0	0	0
A02	1	1	0	0
A03	1	0	1	0
A04	1	0	1	0
A05	0	0	0	0
A06	1	1	0	0
A07	0	0	0	0
A08	1	1	0	0
A09	1	1	1	1
A10	1	1	0	0
A11	1	1	0	0
A12	0	0	0	0
A13	1	1	0	0
A14	1	0	1	0
A15	0	0	0	0
A16	1	1	0	0
A17	1	0	1	0
A18	1	1	0	0
A19	1	0	1	0
A20	1	0	1	0
A21	1	1	1	0
A22	1	1	0	0
A23	1	1	0	0
B01	1	1	0	0
B02	1	1	1	0
B03	1	1	1	0
B04	1	1	1	0
B05	1	1	0	0
B06	0	0	0	0
B07	1	1	0	0
B08	1	0	1	0
B09	1	0	1	0
B10	1	0	1	0
B11	1	1	0	0
B12	1	1	1	0
B13	0	0	0	0
C01	1	1	0	0
C02	1	1	0	0
C03	1	1	0	0
C04	1	1	1	0
C05	1	0	1	0
C06	1	0	1	0
C07	1	1	0	0
C08	1	1	1	0
C09	1	1	1	0
C10	1	1	1	0
C11	1	1	1	0
C12	1	1	1	0
C13	1	0	1	0
C14	1	1	1	0
C15	1	1	0	0
C16	1	0	1	0

Table A2. *Cont.*

Case	Exchange Relation	Reciprocity		
		A	B	C
	established	direct	indirect	negative
D01	1	0	1	0
D02	1	1	0	0
D03	1	0	1	0
D04	1	1	1	0
D05	1	1	1	0
D06	1	0	1	0
D07	1	1	1	1
D08	1	1	0	0
D09	0	0	0	0
D10	1	0	1	0
D11	1	1	0	0
D12	1	0	1	0
D13	1	1	1	0
E01	1	1	1	0
E02	1	1	0	0
E03	1	0	1	0
E04	1	0	1	0
E05	1	1	0	0
E06	1	1	0	0
E07	1	0	1	0
E08	1	0	1	0
E09	1	0	1	0
E10	1	0	1	0
E11	1	1	0	0
E12	1	1	1	0
E13	1	1	0	0
	70	46	43	2

"1" indicates the presence, "0" the absence of a condition/outcome.

Table A3. Truth table of outcome "broken relationship". (The background colors highlight the presence of the different exchange relations and reciprocity types.)

Case	Exchange Relation	Reciprocity		
		A	B	C
	broken	direct	indirect	negative
A01	1	0	0	1
A02	1	1	0	1
A03	1	0	0	1
A04	1	0	0	1
A05	1	0	0	1
A06	1	0	0	1
A07	1	1	0	1
A08	0	0	0	0
A09	1	0	0	1
A10	1	1	0	1
A11	1	0	0	1
A12	0	0	0	0
A13	1	0	0	1
A14	1	0	0	1
A15	0	0	0	0
A16	1	0	0	1
A17	1	0	0	1
A18	1	0	0	1
A19	1	0	0	1
A20	1	0	0	1

Table A3. *Cont.*

Case	Exchange Relation	Reciprocity		
		A	B	C
	broken	direct	indirect	negative
A21	1	0	0	1
A22	1	0	0	1
A23	0	0	0	0
B01	1	0	0	1
B02	1	0	0	1
B03	0	0	0	0
B04	1	0	0	1
B05	1	0	0	1
B06	1	0	0	1
B07	0	0	0	0
B08	1	0	0	1
B09	0	0	0	0
B10	0	0	0	0
B11	1	0	0	1
B12	1	0	0	1
B13	1	0	0	1
C01	1	0	0	1
C02	1	0	0	1
C03	1	0	0	1
C04	1	0	0	1
C05	1	0	0	1
C06	1	0	0	1
C07	0	0	0	0
C08	1	0	0	1
C09	1	0	0	1
C10	0	0	0	0
C11	1	0	0	1
C12	1	0	0	1
C13	1	0	0	1
C14	1	0	0	1
C15	1	0	0	1
C16	1	0	0	1
D01	1	0	0	1
D02	1	0	0	1
D03	1	0	0	1
D04	0	0	0	0
D05	1	0	0	1
D06	1	0	0	1
D07	1	0	0	1
D08	1	0	0	1
D09	1	0	0	1
D10	0	0	0	0
D11	1	0	0	1
D12	0	0	0	0
D13	1	0	0	1
E01	1	0	0	1
E02	1	0	0	1
E03	1	0	0	1
E04	1	0	0	1
E05	1	0	0	1
E06	0	0	0	0
E07	0	0	0	0
E08	0	0	0	0
E09	1	0	0	1
E10	0	0	0	0
E11	1	0	0	1
E12	1	0	0	1
E13	0	0	0	0
	60	3	0	60

"1" indicates the presence, "0" the absence of a condition/outcome.

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