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## Article

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## Article

# Analysis of the Disparity between Recurring and Temporary Collaborative Performance: A Literature Review between 1994 and 2021

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**Abstract:** *Background:* Performance frameworks are common ways to guarantee the success of a collaboration by assessment/improvement of the organisations. However, collaborative performance in recurring collaborations (RC) and temporary ones (TC) are being measured differently due to their inherent characteristics; *Methods:* A systematic review of 282 existing studies, from 2000 onwards, into collaborative networks divided between RC and TC based on the duration of collaboration and the application of the studies was performed. The result gave rise to the thematic analysis of the textual narratives, as well as a quantitative meta-summary of the synthesis; *Results:* The review shows two different approaches to guarantee the performance of the collaboration. The first group provide a recipe for success by recognizing the causal relationship between nine collaborative measures, including information and risk sharing, trust, commitment, agility, power balance, leadership, prior-experience, and alignment. The second group ensures the success of collaboration by selecting suitable partners based on their previous performance emerging through synergy, readiness, agility and internal–external factors; *Conclusions:* The reasoning behind these differences are discussed and the current gaps in research are outlined.



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**Keywords:** collaboration; collaborative performance; inter-organisational collaboration; temporary collaboration; recurring collaboration; collaborative performance; partner selection; supply chain; virtual organisation

## 1. Introduction

The everchanging nature of logistics, in the light of new challenges, requires a structure that responds quickly to the rapid changes in the environment [1,2]. To that end, collaborative networks are adapted to survive and compete through collectively attracting the contribution of partners to share benefits [3]. The structure of the collaboration dictates their capacity to reflect upon poor performance and correct it in the next stage. Some collaborations recur (RC) and, therefore, they can look back at their performance and take corrective actions before the next recurrence [4,5]. Conversely, in TC, the failure of the collaboration means the failure of the organisation [3,6–10] due to the lack of chance for correction at the next recurrence. Although collaboration itself leads to improved performance [11], a high level of failure among collaborative networks [12] brings some scholars to criticise the existing measures of performance for collaboration.

The first group finds the existing inter-organisational measures incompatible and unreliable to measure intra-organisational performance [13] by ignoring the interdependence in collaborative structures [14]. They argue that the existing performance measures are not designed to measure the performance outside the boundaries of the organisation [15]. Although the existing performance methods are used for supply chain or public sector collaborations, some scholars argue against the direct application of inter-firm performance measurements to the intra-firm collaborative interactions [6,11,14].

The second group do not object to the use of existing performance measures in collaboration, such as SCOR for supply chain [6,16] or balanced scorecards [17,18], and some only suggest that non-financial performances to replace the financial measures [19].

However, the third group believe that different structures of collaborations yield different performances [20,21] and, therefore, cannot use the same measures. This unsuitability appears to be due to the fact that existing performance frameworks are based on historic data which are not available in temporary collaborations [22,23]. To assess the latter claim, we need to look into the difference between temporary vs. recurring of collaborations.

### 1.1. Temporary vs. Recurring Collaborative Networks

In the context of this paper, a Temporary Collaboration (TC) is defined as a temporary alliance of independent enterprises [24] which is formed in response to a single market opportunity [25]. A Recurring Collaboration (RC) is defined as a collaboration between entities from different companies over an indefinite span of time. Historically, collaborative performance is explored in the context of the RC with long-term outlooks, such as supply chains, strategic alliances, and coalitions. The emergence of TC also produced a variety of new jargons as follows.

*Virtual organisations* (VO) represent a temporary alliance of independent enterprises who share skills, competences, and resources to maximise business opportunities [24]. The term “virtual” is associated with the lack of physical headquarters and geographical dispersion [6].

*Cluster supply chain* is an order-based production alliance, with short life-cycle due to changing customer demands [26].

*Build-to-order supply chain* is a manufacturing process in response to single orders which forms temporary structure within a supply chain to create flexibility and agility [20].

*Episodic collaborations* are firms who work jointly to exchange and share knowledge or skills to respond to a specific problem or new opportunity. “Episodic” refers to the defined beginning and end of collaboration [27].

*Spontaneous virtual team* initiates, forms and manages the geographically and temporarily dispersed members to share responsibility in response to rapid changes in technology and demand for product [28].

### 1.2. Performance in Temporary vs. Recurring Collaboration

As a result of the difference mentioned above, the RC has ample time to react to poor performance [16,23], whilst the TC has no time to go back and correct the performance [11,13,14]. The existing performance measures are of a recurring nature and seldom address the short-lived nature of the TC. The temporary nature and “made-to-order” structure of the temporary collaborations renders them vulnerable to the selection of weak or unreliable partners [29] and may increase the risk of failure in these collaborative networks. To that end, some scholars suggest alternative ways of measuring performance for TC. This includes the selection of suitable partners for collaboration [6,7,29] instead of using existing performance measures [7] or defining new collaborative performance determinants [13], for example interactive performance measures, such as organisational learning [30].

In the light of the above challenges, the present literature review consolidates the body of literature to first distinguish between the approaches taken by different scholars towards recurring and temporary collaborations. Second, it identifies the patterns in the development of the literature on performance measurement of collaborations. The results are expected to draw the attention of the academic community to the paucity of clear frameworks for performance in temporary collaborations and the lack of a generally agreed terminology in the field. This may assist in better understanding the requirements of inter-organisational collaborative performance and setting a collaborative performance framework based on recurrence. The results are also expected to highlight the gap and set the scene for further empirical research by addressing performance determinants in temporary collaborations. The following review investigates the literature to identify

whether there are any differences between the collaborative structures when it comes to performance. Investigation of this literature could answer the following questions. First, is there any distinction between the pattern of the literature when they address the temporary and recurring collaborative performance? If so, what are the communality or distinctive characteristics?

### 1.3. Theoretical Basis and Assumption

The main theoretical approach used here is the resource dependency theory [31] which focuses on how the inter-organisational relationships and their formation helps an organization acquire resources to reduce uncertainty and interdependence. The organisations who collaborate with each other in order to align their actions achieve a higher level of performance in a shorter period of time [18] and react to the uncertain environmental factors [32]. These resources could include physical, psychological, social, or organizational characteristics [33]. The assumption is that the organisations share their resources to achieve a higher performance and will be further validated through literature review.

## 2. Methodology

A constructivist approach to thematic analysis is adopted [34,35] to synthesise the measures and frameworks addressing collaborative performance. It also identified the gap(s) in existing literature to give rise to further research directions and sets the agenda from which the testable hypotheses are drawn. To make the study reproducible, first a protocol was designed and validated through a peer reviewed process to provide a plan for the rationale of the literature review, the area of inclusion and exclusion, the search plan, keywords, the screening strategy, and a preliminary coding sample. Then, three steps were followed, including the literature search and screening the abstract, followed by full text. The search used the protocol to retrieve all relevant articles, eliminate the duplicates, and screen the collated result [36]. In the absence of a reliable text-mining software, the screened texts were coded by hand to highlight the contexts and methods, as well as the limitations to the external validity of the review. In a meta-analysis, coding studies serve two purposes. The brief description of the process and result is provided as follows.

The first literature found to articulate the collaborative advantage [37] was Kanter who described it as the road to success. From the year 2000, the total 234,305 records were retrieved, where the breakdown is indicated in Table 1:

**Table 1.** Breakdown of the keywords.

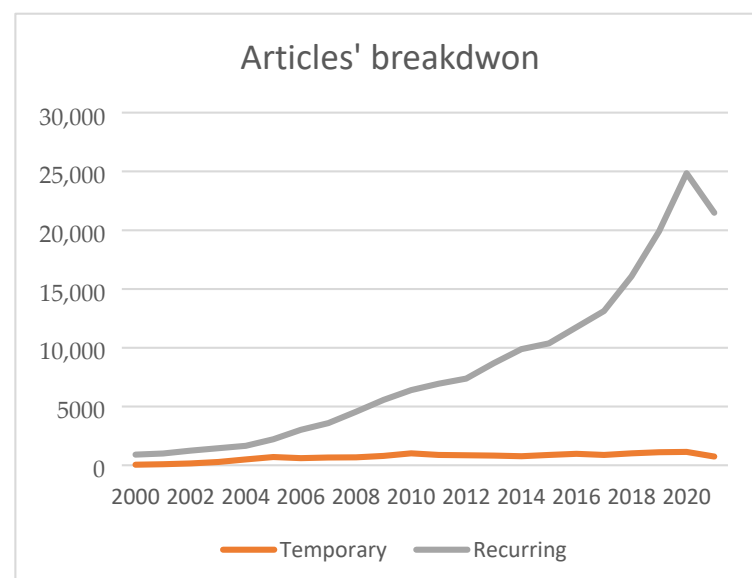
Type of Collaboration	Temporary Collaboration	Recurring Collaboration
Keywords	("Virtual organisation" OR "Virtual network" OR "ad hoc networks" OR "made to order supply chain", "Project" OR "new product development project" OR "temporary alliances" AND "performance")	Your query: ("supply chain" OR "public collaboration" OR "strategic alliances" OR "joint venture" OR "Recurring Collaboration" AND "performance")
Number of articles	18,567	215,738

After limiting the result to English journals and conference papers, the following numbers can be classified in Table 2 and subsequently Figure 1.

In 2021, the drop in the number of articles can be attributed to the interruption of academic activities because of the pandemic. The various results were drawn from different databases including Scopus and Science Direct university's Summon engine. As the different search engines represent the same journals, many results overlap. The results of the keyword search were then searched backwards [38] by reviewing the bibliography of the most relevant articles, followed by forward searches of the most influential authors and the articles referencing them. For example, in the current study, the publications by authors in both are indicated in Table 3.

**Table 2.** Breakdown of the articles based on the publication year.

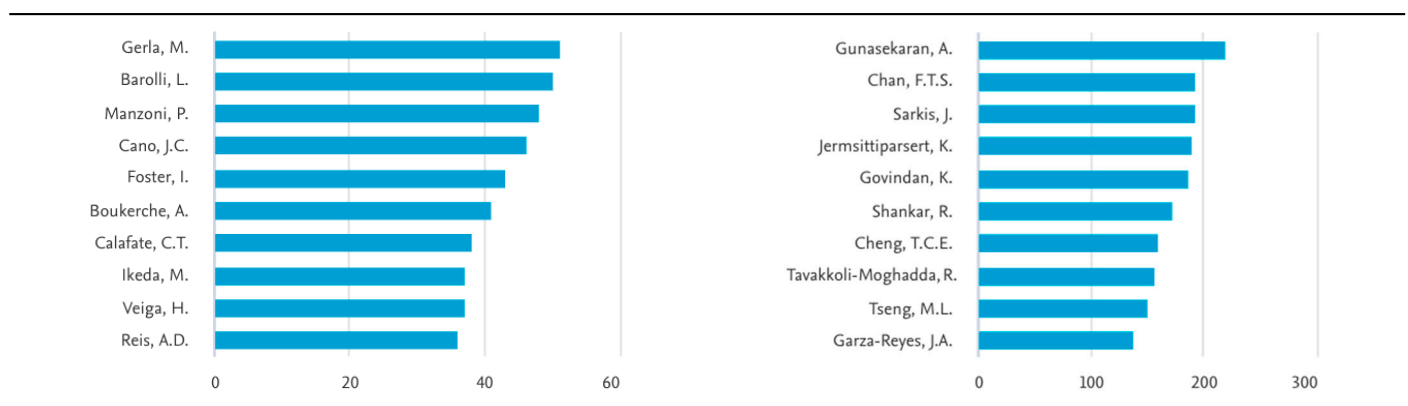
Year	Temporary	Recurring
2000	51	909
2001	94	1006
2002	165	1252
2003	290	1453
2004	506	1658
2005	703	2215
2006	614	3017
2007	661	3599
2008	685	4564
2009	800	5563
2010	1018	6400
2011	877	6945
2012	857	7375
2013	830	8681
2014	773	9883
2015	889	10,374
2016	980	11,751
2017	887	13,124
2018	1020	16,076
2019	1119	19,900
2020	1143	24,856
2021	742	21,491
<b>Total</b>	<b>15,704</b>	<b>182,092</b>

**Figure 1.** The breakdown of the articles based on their subject. Source: Extracted from various search engines including Science direct, Scopus and the Summon engine.

These authors were the initial sources of backward and forward searches. Although this is an on-going process throughout the whole study, a sufficient amount of material for literature review analysis was obtained when the familiar and repetitive citations and concepts re-appeared [38]. The validity of the data was primarily verified by obtaining from high-quality vendors, such as Scopus, Science Direct, JSTOR, Elsevier, and the Summon search engine. The articles included met a minimum quality requirement, such as being published in peer-reviewed journals with a sufficient theoretical background. This requirement was met by 216 publications in a grade 1 journal or higher according to ABS ranking and Q4 journal or higher according to SJR ranking. The final result included 1725 articles

for RC and 274 articles for TC. It also extends to a review of 69 articles by ref. [39], regarding partner selection in collaboration; ref. [40], who completed a categorisation of 61 articles in supply chain performance; ref. [41], who completed a review of articles about partner selection in agile collaborations; ref. [42] who performed a review of 69 articles focused around collaboration determinants in a supply chain; and ref. [43] who performed a consolidation of 115 articles on dyadic collaboration (the collaboration between suppliers and manufacturers). Additionally, we included the review of 238 articles on supply chain metrics by ref. [44], and 111 articles on project network performance [45] and 52 papers reviewed from the financial versus non-financial performance measure [19]. Some of these articles are overlapping. To that end, the present review is built upon 282 articles focusing on various areas of collaborative performance.

**Table 3.** Breakdown of the publication by author.



### 3. Results

#### 3.1. Thematic Analysis of the Literature

To identify the quantity of expert interest and the direction of the field, thematic analysis was used to categorise the literature based on duration of collaboration and the application of the studies. The following words, shown in Figure 2 appeared more frequently in the analysis.



**Figure 2.** The emergence of the words appeared in thematic analysis of the literature.

#### 3.2. Emerging Areas—Collaborative Performance

Table 4 identifies two threads within 282 reviewed articles that focused on RC and TC which identifies the main collaborative measures as the following:

**Table 4.** The frequency of the main collaborative measures in the literature.

Collaboration Type	Information Sharing	Trust	Commitment	Alignment	Prior Experience	Leadership	Agility	Risk Sharing	Power Balance
TC	31	22	20	13	29	27	29	0	0
RC	72	64	42	32	48	30	37	4	9
TC/RC	3	3	1	0	0	1	1	0	0
Total	106	89	63	45	77	58	67	4	9

This result, consolidated with the literature review synthesised by the authors in this paper, shows a few prominent criteria as the following, though this list is not exhaustive.

**Information sharing.** A relationship between information sharing and performance is well established [30,46–49]. It significantly affects the performance of a collaboration in both RC and TC, including product development networks [50], public–private networks [51] and supply chains [43,52–54], and outsourcing networks [55]. Some suggest this effect is direct [56], whilst an indirect link is also mentioned through mediating variables, such as agility [57], trust [58], and risk [59], by reducing the prediction error [60] or through the enrichment of intellectual capital [61], information integration [62], information technology processing [63] or the use of blockchain technology [64]. Most sources out of the 106 we found, and indicated in Tables 4 and 5, agree on the positive effect of information sharing or knowledge sharing on performance. New development, such as traceability of information throughout the network, can also be further explored [65].

**Table 5.** The main performance determinants in literature divided by source.

	Recurring Collaboration	Temporary Collaboration
Information sharing	Badea et al. (2014); Beuren et al. (2021); Büyüközkan and Arsenyan (2012); Cao and Zhang (2003); Chetthamrongchai and Jernsittiparsert (2020); Gazley (2010); Govindan et al. (2015a, 2015b); Hsu (2016); Jeng (2015); Laihonon and Pekkola (2016); Montoya Torres and Ortiz-Vargas (2014); Nyaga et al. (2010); Rigg and O'Mahoney (2012); Salam (2017); Shi et al. (2021); Simatupang and Sidharan (2005); Wamba et al. (2010); Wu et al. (2014); Yang (2014);	Sodhi and Son (2009); Acar and Atadeniz (2009); Durugbo (2016); Lory-Okoumba and Mafini (2021); Sayyadi Tooranloo et al. (2018); Um et al. (2017)
Trust	Alfaro Saiz et al. (2007); Azevedo et al. (2013); Buyukuzkan and Arsenayan (2012); Chen et al. (2011); Gazley (2010); Govindan et al. (2015); Grau et al. (2012); Han et al. (2021); Heimberger and Deitrich (2012); Hsu (2016); Hudnurkar et al. (2014); Jeng (2015); Johnston et al. (2004); Koohang et al. (2017); Lehtinen and Ahola (2010); Mathivathanan et al. (2017); Nyaga et al. (2010); Rigg and O'Mahoney (2012); Wamba et al. (2020); Wu et al. (2014)	Acar and Atadeniz (2015); Lehtinen and Ahola (2010); Lory-Okoumba and Mafini (2021); Sayyadi Tooranloo et al. (2018); Sodhi and Son (2009)
Commitment	Buyukuzkan and Arsenayan (2012); Chen et al. (2011); Chetthamrongchai and Jernsittiparsert (2020); Dubey et al. (2018); Gunasekaran et al. (2017); Gupta et al. (2019); Lehtinen and Ahola (2010); Nyaga et al. (2010); Pekkola et al. (2013); Salam et al. (2017); Wu et al. (2014)	Acar and Atadeniz (2015)
Alignment	Badea et al. (2014); Cao and Zhang (2011); Choudhary et al. (2020); Frederico et al. (2021); Gunasekaran and Kobu (2007); Gunasekaran et al. (2017); Heimberger and Deitrich (2012); Lehtinen and Ahola (2010); Mathivathanan et al. (2017); Simatupang and Sidharan, (2005); Verdecho et al. (2012)	Acar and Atadeniz (2015); Durugbo (2016); Huma et al. (2020); Lehtinen and Ahola (2010); Mishra et al. (2018)



Table 5. Cont.

	Recurring Collaboration	Temporary Collaboration
Prior Experience	Buyukuzkan and Arsenayan (2012); Chienwattanasook and Jermstipparsert (2019); Govindan et al. (2015a, 2015b); Gunasekaran and Kobu (2007); Gupta et al. (2019); Mathivathanan et al. (2017); Ramanathan (2014); Ukko and Saunila (2020)	Mishra et al. (2018); Pekkola and Ukko (2016); Pirozzi and Ferulano (2016); Sayyadi Tooranloo et al. (2018)
Leadership	Azevedo et al. (2013); Buyukuzkan and Arsenayan (2012); Chetthamrongchai and Jermstipparsert (2020); Dubey et al. (2018); Frederico et al. (2021); Govindan et al. (2015a, 2015b); Gunasekaran and Kobu (2007); Gunasekaran et al. (2017); Gupta et al. (2019); Hsu (2016); Laihonon and Pekkola (2016); Mathivathanan et al. (2017); Pekkola et al. (2013); Salam (2017); Udokporo et al. (2020); Ukko and Saunila (2020); Wamba et al. (2020)	Durugbo (2016); Loury-Okoumba and Mafini (2021); Pirozzi and Ferulano (2016)
Agility	Dubey et al. (2018); Gupta et al. (2019); Salam et al. (2017); Udokporo et al. (2020); Wadhwa et al. (2010)	Acar and Atadeniz (2015); Fayezi et al. (2015); Lehtinen and Ahola (2010); Li et al. (2009); Loury-Okoumba and Mafini (2021); Pekkola and Ukko (2016); Sayyadi Tooranloo et al. (2018)
Risk sharing	Li et al. (2015); Matopoulos et al. (2007)	
Power Balance	Gazley (2010); Lambert and Pohlen (2001); Beuren et al. (2021); Hingley (2005); Kim and Oh (2005); Matopoulos et al. (2007); Ramanathan (2014); Skeltcher and Sullivan (2008); Sodhi and Son (2009)	

**Trust** is another determinant of performance in collaboration [50,60], or even the predictor of it [51]. Although ref. [42] provided 12 different sources for the effect of trust in collaborative performance, ref. [56] believes that trust influences the performance, but not as effectively as information sharing. Some believe that trust amongst other measures leads to the perceived performance [66] or determines the success or failure of common objectives within a collaboration [67]. Most sources out of 89 we found, and that are indicated in Tables 4 and 5, agree on the positive effect of information sharing or knowledge sharing on performance.

**Commitment.** Many scholars emphasised on the positive effect of commitment as a collaborative activity on performance [11,42,50,56,67,68]. In general, most sources, out of the 63 we found and that are indicated in Tables 4 and 5, agree on the positive effect of commitment on performance.

**Alignment.** The effect of alignment on performance is studied from various angles, including incentive alignment [52,59,68–70] or alignment fitness, which is the source of performance prediction process alignment [71] and setting strategies [17,72,73] and goal congruence [53]. As most sources on this determinant agree on their positive effect on performance, we do not feel the need to discuss it in more detail. Additionally, the alignment/fit of the future collaboration [72–74] is an indicator of readiness for collaboration [72,73] based on strategic fit, organisational agility, and past performance. Strategic alignment has also been found to be a factor in performance of SMEs [75]. In general, most sources out of the 45 we found, and that are indicated in Tables 4 and 5, agree on the positive effect of alignment on performance.

**Prior experience.** There are contradictory opinions about the effect of prior experience in performance. For example, ref. [50] believes that the experience alignment of the partners influences performance, and ref. [21] further confirms that prior experience leads to a consistent performance. However, ref. [74] found no relation between prior affiliation and the outcome of the collaboration. In general, most sources out of the 77 we found, and



that are indicated in Tables 4 and 5, agree on the positive effect of prior experience on performance.

**Leadership.** Scholars in this ilk emphasized the effect of leadership on the success of collaboration [50], as the predictor of performance [51] and finally the influence of leadership on the performance as it changes the culture of the network [76]. In general, most sources out of the 58 we found, and that are indicated in Tables 4 and 5, agree on the positive effect of leadership on performance.

**Agility.** The effect of agility to respond to the changes in performance is established by variety of scholars [19,77,78] through mediating variables, such as cost efficiency [57], flexibility [77], or technology adoption [78]. It is essential to note that agility perspective in SCOR model (and flexibility as one of agility's measures) is a measure of competition among supply chains, rather than individual partners [79]. However, the agility and flexibility in temporary collaborations focuses on the readiness of individual partners to join the collaboration [80]. Additionally, it is a determinant of agile supply chains which are, in nature, more similar to TC than recurrent collaboration. The reason is that the agile supply chains may quickly re-structure (temporarily join or divorce the long-term collaboration) in response to the environmental changes. To that end, the measure of agility defined in temporary collaborations does not exactly overlap with the measure of agility in the SCOR model. Some of these measures are being extended to new types of networks, such as industry 4.0 and smart manufacturing [81], although more research is required to establish if these measures are suitable for the collaborative aspect for industry 4.0. In general, most sources out of the 67 we found, and that are indicated in Tables 4 and 5, agree on the positive effect of agility on performance.

**Risk sharing.** Collected data from 350 manufacturing firms in China [58] found that the risk information sharing and a risk sharing mechanism improve financial performance, and the effectiveness of the former is strengthened by relationship length and supplier trust. The latter is strengthened by a less studied measure of shared SCRM understanding which is beneficial for partner selection [82].

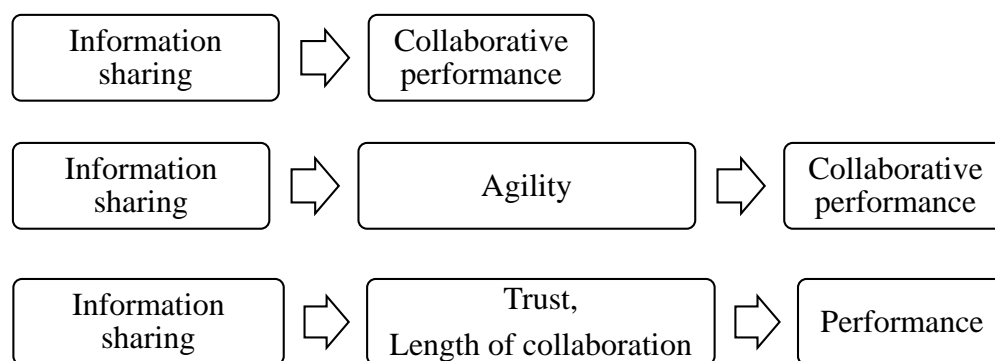
**Power balance.** This is a source of contradictory opinions. For example, the power asymmetry increases performance [21] as it leads to the selection of better collaborative partners. This opinion is shared by scholars who assert that the balance of power is a predictor of performance [51]. Some scholars [83] are more specific and found that if the balance of power leads to joint decision-making for a minimum of 110 months, collaborative performance improves. However, this is in opposition to those scholars [82] who think that the power asymmetry is the source of collaborative performance, as the uncertainty inherited in risk pushes partners to collaborate further. Many scholars disagree with this view. For example, they believe that power asymmetry optimises the performance of the powerful firm at the expense of smaller firms [84]. This is in line with the suggestion [85] that collaborative success as a result of trust-building might be the consequence of a dominance pattern and the attempt of the powerful firm to prevent the smaller firms from collaborating with another firm. However, based on the power paradox theory [86], which states that the smaller partners are extremely skilled, the smaller firms gain a competitive advantage by collaborating with a more powerful partner. The significance of their study is in the structure of the chosen supply chain (retail), which is a loser type of partnership with transactional gains and more independence and is not controlled by the power of highly concentrated buyers (such as automotive industry). However, it is noteworthy that nine articles we found on power balance focus on RC and no literature was found in assessing the power balance in TC. The reason might be the temporary life cycle of TC that seldom allows the development of power asymmetry within the collaboration, or the lack of data at the back of a short collaboration which makes the research on this less desirable. Nevertheless, a gap in TC power balance literature is identified [22,51,87].

#### 4. Discussion

##### 4.1. Ensuring the Performance of Collaboration through Causal Relationships

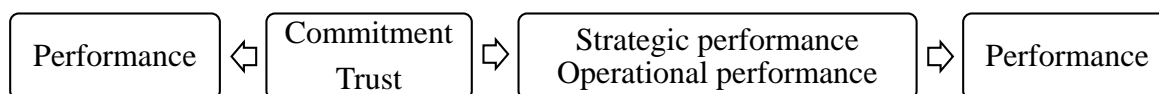
The articles studied so far clearly introduced measures for collaborative performance by adopting a causality approach. They provide a clear path (e.g., through trust or information sharing) for collaboration to attain performance. The message is clear, if you need your performance to increase: increase the trust!

Although some themes become immediately evident upon collaboration, such as trust, leadership, commitment, and prior experience, some performance determinants are not that prominent. A variety of articles investigate the causality between one variable and performance and they come up with different and sometimes contradicting ideas. They introduce different variables affecting performance, either directly or through mediating variables (MV), see Figure 3.



**Figure 3.** Causality between information sharing and performance based on different articles.

For example, some scholars [49,56,88,89] believe that information sharing directly affects performance; whilst others [57] believe that the information sharing influences the performance but through agility. Another opinion is that information sharing influences the performance through both trust and length of collaboration [58]. Sometimes such a mediating effect is believed to be reciprocal. Figure 4 shows that commitment and trust influence performance through strategic and operational perspectives, whilst the strategic and operational perspective could influence performance via raising commitment and trust [87].



**Figure 4.** The effect of trust and commitment as a key mediating variable on performance.

Fewer articles in this group use the existing performance frameworks in TC. For example, the elements affecting performance included a balanced distribution of perceived trust, future interaction, and strategy alignment, amongst others [22]. Other scholars introduce existing measures, such as information sharing and communication [27,28], trust, and information sharing [13,88]. The others focus on providing new performance determinants, such as the effect of collaboration on market performance [20], interconnectedness, and consistency [89], but, because their evidence, from these few cases, have not been confirmed or even tested by other scholars, these less frequent measures are not discussed in our review.

##### 4.2. Ensuring the Performance of Collaboration through Predicting the Best Partner

There is a second approach which ensures the success of collaboration by selecting suitable partners based on their previous performance. In the case of TC, due to its short life cycle, the historic data of previous performance within collaboration is not available [2,90]. The publicly available data and previous data from other TC are not useful, because

the nature of TC implies the dynamic of that collaboration never repeats, due to having different partners in each temporary collaboration [23]. Hence, it is very difficult, if not impossible, to find the same collaborative partners for the same task to draw historic data. For these newly introduced forms of collaboration, scholars provided separate suggestions to guarantee the performance of a future collaboration by assessing the properties of the potential partners. One of the earliest accounts of this type suggested a trade-off solution for accepting a particular company into a collaboration, resource contribution is another factor [91]. Some scholars use the performance determinants mentioned in Table 6 such as trust and commitment or information sharing [92,93], to predict the level of achieved performance by each partner and select them accordingly. Some introduce new measures, such as the following:

**Table 6.** The gap in research and future research direction.

Gap	Research Questions/Hypothesis	Research Agenda
Understudied determinants of TC	What are the performance determinants for TC?	Identifying additional determinants of TC performance to existing research.
Non-justified and non-generalisable determinants of TC	Do the identified determinants apply equally to TC and RC?	Justification and generalisation of the identified determinants.
Lack of emphasis on the theoretical basis of the determinants	What are the theoretical grounds of the determinants introduced and how are they related?	Mapping the identified frameworks and determinants to the related theories or creating new theories.
The literature in collaborative performance, especially in TC is not consolidated or universally defined.	How could the body of research in the field of TC be integrated and unified?	A holistic study to consolidate and unify the body of existing research, including definitions of the determinants.
No distinction between the individual contribution of the firm to the whole performance and the synergetic effect of the collaboration on the performance.	What are the distinctions between the individual contribution of the firm to the whole performance and the synergetic effect of the collaboration on the performance?	Examining and comparing the effect of the individual contribution of the firm on performance in a real organisation with the synergetic effect of the collaboration.

**Agile measures:** 65 determinants for agile collaboration are introduced [41] including rapid response, adaptive infrastructure, concurrency, information management, enabling tools and techniques, connectivity access, design for customer delight, synchronised processes, dynamic multi-venturing, refined accountability, information system infrastructure, empowered people, total quality management, and value-based compensation.

**Synergy measures:** The performance determinants that affect the overall performance, leveraging each other's capabilities and competencies [5,29]. They use a formula for calculating the synergy gained as a result of this specific collaboration and measure the health of the relationships to predict sustainability of a collaboration network. However, they do not justify why they consider these measures as the generator of synergy. Additionally, in TC, we are not necessarily looking at the sustainability of collaboration due to the temporary nature of it.

**Internal–External measures:** A framework to customise a performance framework for inter-relational characteristics from internal and external perspectives is provided [94]. In essence, they provided a tool to define and measure the performance of each collaboration on a case-by-case basis. However, their generic framework, seldom provides specific measures and it suggests the use of historic data, which might not exist in a particular TC.

**Readiness measures:** Some scholars use an intangible value system (such as benefit, prestige, social recognition, trust, ethical code) to determine survival capacity and performance capability [8]. Some use tangible (economic benefits, productivity related) and intangible (strategic, social) values to develop new collaboration opportunities. Others use a value system, but they refer to them as competencies. They basically consider the intangible values, such as other partners' perception, to measure if a certain partner performs

above or below the expected hard competency levels. The intangible values are perceptions of an organisation's traits (diplomacy and honesty), recommendation, past behaviour, and expected performance; and tangible values (technical) are "capability", "capacity", "cost", and "conspicuity" [10].

## 5. Conclusions and Future Research Agenda

The expansion of collaborative forms in the industry and academic literature in recent decades made a comparative study necessary to identify the similarities and the differences between two major types of collaboration: TC and RC. A thematic analysis of 282 studies, based on the duration of collaboration and the application of the studies, identified the following threads. The first contribution is that the quantified expert interest shows the following collaborative measures appeared more frequently in the analysis. Information sharing is leading the way amongst both TC (31) and RC (72) collaborative types, with risk sharing being the least frequent measure amongst TC (0) and RC (4). Within RC measures such as trust (64), prior experience (48) and commitment (42) are the next prominent. This makes sense as the recurring nature of the collaboration provides precedence, and the record of previous success stories give rise to trust to different members of the collaboration. In TC, agility (29), prior experience (29), and leadership (27) are the next prominent. This is also in line with the nature of TC as the limited life span of the collaboration benefits from the agility of the collaboration in order to respond quickly to the changes and this can be facilitated by effective leadership. Alignment and power balance are amongst the less studied measures of collaboration, especially in TC, where the alignment (13) of the members with the collaborative policies might be less possible during the temporary life span as the opportunities for feedback and corrections is minimal. Power balance is not discussed within TC as the temporary nature of TC stops power asymmetry from being developed.

The second contribution is how TC and RC use the above nine measures in different ways to improve their performance. It seems that RC has the luxury of building long-term causal relationships between above collaborative measures due to its recurring nature. This gives RCs the leverage to measure and control their performance by manipulating the mediating variables. However, the TCs use the collaborative measures to build a suitable partnership which is then guaranteed success by taking into account different groups of collaborative measures, such as agility measures, readiness measures, internal-external factors, and synergy measures.

To that end, the current study is put forward to answer a series of questions. First, is there any distinction between the pattern of the literature when they address the TC and RC performance? The body of knowledge in this area exhibits a significant growth in both branches in the past two decades. However, a lot of common measures are being used interchangeably. So even though their different characteristics are recognised by scholars, seldom new measures are created for TC and scholars mainly use well-established RC measures for evaluating the performance of TC. This further confirms the findings of previously conducted reviews [45] that analyse the performance assessment approaches to TCs, such as project networks.

Although this similarity is justified or not, could be the subject of further research, as explained in Table 6. Further gaps in research and some suggestions for the future research direction are also identified as follows.

To summarise, the following threads can be recognised:

- Determinants of TC are understudied compared to RC. Further studies are required to identify new determinants of TC performance in addition to the ones which are already developed. Moreover, the determinant, its components, and the calculation methods are not always clearly defined and justified in the literature. An inductive approach to empirical research where a generalisable number of case studies from real collaborations can be observed and/or the secondary data about the effect of each determinant on performance can be collected from existing sources might help to generalise the results, through a statistically significant set of data.

- The collaborative determinants provided are rarely tested in real organisational settings. A holistic research study, which collectively verifies the suitability of the suggested determinants for improving/assessing performance in real collaborative settings is missing. This could also further be extended to provide a clear distinction between the determinants with a focus on repetitive nature, their soft or hard emphasis, and their analysis level. This can be overcome through a deductive research study where the empirical design of case studies in a generalisable number of collaborative organisations, could further confirm or reject the effect of determinants on performance in real situations.
- The reviewed articles rarely, if ever, emphasise the theoretical basis when they introduce the determinants and frameworks for performance in collaboration. This makes it difficult to categorise or evaluate the determinants based on their origin. A deductive approach through the theoretical analysis of existing literature can connect the determinants to existing theories. Further inductive designs of empirical analysis could also help to connect the measures that currently do not fit into existing theories.
- The determinants introduced are scattered and even the determinants with the same name have different definitions. The study shows that the fast-growing body of literature on collaborative performance, especially in TC is yet to be consolidated and universally defined. Despite the development of a substantial amount of literature addressing the collaborative performance, there is no consistency and uniformity between the employed frameworks. Even though some of the criteria carry the same name (for example trust), their definition varies from one scholar to another. The severity of the problem would be clearer when compared to RC performance criteria with clear definitions. For example, the criteria designed for supply chains in the SCOR reference model as the product of 12 months' cooperation between 70 manufacturers have agreed a definition published and constantly revised by the Supply Chain Council (2005). Although the vast acceptance of this reference model can be replicated for TC, a similar procedure is required to establish their definition, and functionality which is accepted by the community of scholars. A deductive approach where a generalisable number of TC networks participate in a series of empirical case studies could help in this regard.
- The effect of synergy in collaboration is still understudied. This becomes more important when scholars consider the effect of individual contributions on performance in collaborations without taking into account the effect of synergy. A framework is required to distinguish between the individual contribution of the firm to the whole performance and the synergetic effect of the collaboration on its performance. This can be done using an inductive approach through a comparative study of the effect of individual contributions, aggregated individual contributions of members, and total collaborative performance. For this purpose, real case studies on organisations in real life situations can be used, or the dynamics between the collaborative members can be studied using simulated models.

The assumptions of the study are also further validated following the finding that resource sharing (information and risk) constitutes 21% of the measures found (110 out of 518 measures). The literature review further confirms that the collaborative partners share their resources to achieve a higher performance.

## 6. Limitations of the Study Which Can Be Complemented by Further Research

The limitations associated with this research are four-fold. First, although this review is comprehensive and synthesises the outcomes of previous reviews, it cannot be exhaustive due to possible mismatches between the present search terms and other potential keywords. Second, the research barely touches upon the existing theoretical frameworks by which other scholars studied the collaboration network, as well as the decision techniques for partner selection in TC which sometimes are used by scholars in lieu of performance measures to guarantee a higher performance. Third, the definitions suggested by the



scholars are used to describe the same measure, such as trust or agility, in different ways. Therefore, the reader is uncertain if they are talking about the same measure, and if it is calculated in the same way. Finally, the research is focused on academic resources of collaboration, there is a rich practice within the industry which, if consolidated and comparatively analysed, can be attractive to both scholars and practitioners. The above limitation could be attractive avenues for further research.

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