Exploring the Effects of Trust and Its Outcomes in B2B Relationship Stages: A Longitudinal Study

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Abstract: Temporal dynamics in business-to-business (B2B) relationships are the evolution of B2B relationship stages. This study offers new insights in examining the impact of the temporal dynamics on firm performance during the B2B relationship stages. Drawing on B2B stage models, social exchange theory and the evolution of trust, the results show that the link between trust and firm performance weakens when a relationship between two parties reaches a particular stage. Trust has a positive effect on firm performance in the same period; however, this positive effect decreases over time. Thus, the impact of trust on firm performance is insignificant in subsequent relationship stages in the start-up context. The impact of trust on firm performance is unstable and decreases over time. This study offers new theoretical and managerial insights regarding the temporal dynamics in B2B relationships.

Keywords: trust; firm performance; temporal dynamics; B2B relationships; the evolution of trust

1. Introduction

Establishing trust is a significant requirement in developing business relationships and has received significant research attention from scholars seeking to investigate the evolution of business relationship stages [1–6]. While prior studies have mainly focused on the determinants of trust and its outcomes, few studies have investigated the evolutionary process of trust (e.g., calculative trust in the exploration stage, cognitive trust in the expansion stage, and affective trust in the maintenance stage) from a longitudinal perspective [1].

A large body of research suggests that changes in trust have a particularly strong impact on direct and indirect firm performance [7]. The expectancy disconfirmation approach focuses primarily on firm performance, resulting from the level of trust among firms’ partners [8]. However, this approach triggers the following three research questions.

• Does trust affect firm performance during the development of B2B relationships?
• If so, are any temporal changes in trust observed when firms evaluate their performance over time?
• Do these temporal effects depend on the dynamics of trust?

This study draws on B2B stage models [9] as a theoretical mechanism for answering these questions. B2B stage models help to establish the developmental process of B2B relationships (e.g., from relationship awareness to relationship dissolution), which affect a firm’s financial and non-financial performance. However, when addressing each stage of a B2B relationship, stage models have a critical weakness: the trust–performance link is a function of time [10]. In other words, trust and performance may be affected by the carryover effects of the same construct over time. We expect that examining a combination of both temporal and carryover effects may provide greater insights into a different perspective regarding B2B stage models. In particular, this study provides conceptual, theoretical, and practical contributions.
Conceptually, this study reinforces recent calls to capture firm-level changes in trust based on a dynamic perspective [1]. We demonstrate that the effect of trust decreases over time, and that the longitudinal effect shows that the positive influence of trust improves during the B2B relationship developmental stages; however, the role of trust in B2B relationships reduces over time. Previous studies initiated the disaggregation of B2B trust into more specific typologies of the relationship lifecycle [1,11].

Theoretically, this study advances a recent debate about whether trust aligns with positive firm performance [2] and demonstrates that trust is dynamic in B2B relationships. The results are significant given that the B2B relationship developmental stages have been questioned by existing studies, emphasizing the positive impact of trust, regardless of the changes in trust performance [12].

Practically, the findings provide differences and similarities between the mechanisms responsible for the evolution of B2B relationships, based on four-time lags (T1, T2, T3, and T4) in the relationship stages. Our findings offer new managerial perspectives regarding the dynamic role of trust in B2B relationships. By demonstrating that the temporal relationship between trust and performance is controlled by relationship length and industry type, this study presents concrete, temporal-specific strategies for changes in trust B2B relationships.

The remainder of this study is structured as follows. First, we present the theoretical background and conceptual framework. Second, we discuss the methodology and study findings. Finally, we discuss the implications and limitations of the study.

2. Theoretical Background and Conceptual Framework

According to B2B stage models [9,13], B2B relationships evolve over time and this developmental process involves the following stages: awareness, exploration, expansion, commitment, and dissolution. Ford’s initial model [14] of B2B relationship development comprised five phases: the pre-relationship stage, the early stage, the development stage, the long-term stage, and the final stage. The key features of stage models facilitate the evaluation of partner relationships and subsequent selection practices [15]. Table 1 presents an overview of the approach used in this study based on existing studies.

| Topic                | Key Findings                                                                 | Selected Papers                                                                 | Relevance for This Study                                                                                   |
|----------------------|-----------------------------------------------------------------------------|--------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------|
| B2B stage            | Stage models provide a better understanding                                 | Dwyer et al. (1987);                                                          | This study adds to the works on B2B stage models to emphasize the importance of dynamics in B2B relationships when firms evaluate their performance with partners over time. |
| Models               | Key features identified in each stage help to evaluate the level of partner relationships and subsequent selection practices. | Ng (2005); Wuyts et al. (2009)                                                |                                                                                                           |
| Social exchange theory (SET) | Organizations interact to maximize their rewards and minimize their costs. | Salam et al. (1998); Pappas and Flaherty, (2008); Shiau and Luo (2012) | Drawing from the literature on trust and performance, this research examines the effects and relationship processes that explain the trust-performance link during the relationship stages. Our research examines relationships between trust and firm performance in terms of temporal effects, and carryover effects, thus expanding the basis of relationship dynamics from T1 to T4 |
| Evolution of trust   | There is a high propensity for interorganizational relationships to develop along virtuous cycles. | Vlaar et al. (2007); Ybarra and Turk (2009)                                  |                                                                                                           |
A common factor across all stage models is the basic tenet that social exchanges are essential when there is a link between a partner’s desire and the expected relationship performance. As such, firms interact to maximize their rewards and minimize their costs, indicating that financial and non-financial performance plays a crucial role in B2B relationships [16–18]. Furthermore, applying social exchange theory, which considers long-term outcomes, a complete understanding of trust is essential for predicting the overall direction of a B2B relationship [19,20]. Trust is a complex, multidimensional, and contextual construct [20]. Trust is perceived as a component of the B2B relationship [12]. In this study, we apply this premise to examine how the trust–performance link changes in subsequent B2B exchange stages.

Parallel to stage models and the social exchange theory, B2B marketing research views the evolution of trust as a predictor of relationship processes and dissolution decision. As trust evolves over time, B2B relationships have a high propensity to develop along virtuous cycles [7,21]. Trust generally evolves when episodes, e.g., positive financial performance, mutual exchange, social satisfaction, etc., occur during subsequent relationship exchanges. This study particularly focuses on the dynamics of the trust–performance link in terms of temporal and carryover effects, thus expanding the basis of relationship evolution from T1 to T4.

In line with these observations, trust in B2B relationships exists when one party has confidence in the other party’s integrity, beliefs and reliability [22]. Typically, trust increases when one party has a positive perception of a relationship's performance [23], enhanced by the belief that the other party in the relationship will not act against its interests in a way that could lead to negative outcomes [2]. Thus, trust can be defined as one party’s belief that its future needs will be fulfilled by actions undertaken by the other party [24].

As shown in Table 1, firm performance is a key factor in long-lasting relationships. A recent study regarding B2B stage emphasized the importance of financial and non-financial performance since B2B markets are complex and evolve [16]. Based on their findings, firm performance can be defined as a party’s financial and non-financial performance based on its business relationships with another party. In this study, two types of firm performance were identified: profitability and market effectiveness. These measures have been widely used in previous research [25,26].

2.1. Hypotheses regarding Temporal Effects

Time is a key factor for organizations seeking to better understand temporal changes in their relationship evaluations, which means that time affects sequential episodes [2,16]. The evolutionary nature of trust is useful in predicting changes in B2B relationship stages [27]. However, trust may affect the same constructs (e.g., Trustt2 and Trustt3) but different outcomes (e.g., Performancet2, Performancet3, and Performancet4). As presented in Figure 1, this research embraces both the evolutionary and temporal approaches; those approaches examine how the trust–performance link is dynamic over time.

In particular, this study seeks to determine whether a firm’s trust–performance link becomes dynamic after sequential episodes. From a social exchange theoretical perspective, the long-term relationship between the two parties is principally concerned with how to predict the effect of trust on firm performance in inter-firm relationships [28]. Numerous studies propose that the outcomes of trust in B2B relationships change over time with the evolution of relationship stages [2,7,21]. In other words, when one party trusts its partner at T1, evaluation of the firm performance at T2 should be initiated. This is a function of trust relative to the subsequent performance of B2B relationships. As such, trust at T1 will likely result in firm performance at T2 when a firm evaluates its relationship performance. Thus, the following hypothesis is proposed:
Hypothesis 1 (H1). Trust at T1 has a direct, positive effect on firm performance at T2.

The effect of trust at both T2 and T3 may be generalizable across longitudinal data at T4. This is consistent with the temporal effects suggested by Johnson et al. [29], and the temporal changes in partner trust observed by Ha et al. [2]. A meta-analysis of B2B relationships demonstrated that if researchers do not know the direction and relative strength of a B2B relationship, they cannot predict whether trust increases or decreases over time [30]. However, this study does not focus on the relationship termination stage but on the development and/or long-term stages. In this case, since the relationship direction is positive, it is possible to predict the effect of trust over time. Our approach is also supported by the development of trust in B2B stage models [31].

Previous studies have highlighted that trust increases over time [24,32,33]. Several meta-analyses of B2B relationships have revealed that the link between trust and relationship duration are positively correlated and thus, trust gradually increases with time [34–36]. Based on these empirical findings, it is possible to note that if a party trusts its partner at T2, it is likely to produce a positive performance with its partner at T3. This study argues that the effect of trust at T2 (or T3) on firm performance at time T3 (or T4) may increase over time. Specifically, firms strive to increase trust by participating in various interactions with their partners, resulting in positive long-term performance. Consequently, trust at T2 (or T3) has a relatively strong impact on firm performance at T3 (or T4). Therefore, the following hypothesis is proposed:

Hypothesis 2 (H2). Trust at both T2 and T3 has a direct, positive effect on firm performance at both T3 and T4, but the trust–performance link at both T2 and T3 is higher than that at both T1 and T2.

2.2. Hypotheses Regarding Carryover Effects

The test for carryover effects is crucial when an object influences itself. Specifically, the carryover effect occurs when conditions are applied to the same construct(s) from T to T+1 (e.g., trust 1 → trust 1, trust 2 → trust 3, etc.) [2]. For example, when a firm evaluates its trust level with a particular partner during subsequent business durations (e.g., from T1 to T2), its level of trust at T1 will subsequently influence its trust at T2 [2]. As noted earlier, trust is likely to increase over time [30]. This indicates that trust has a positive effect on sequential trust. According to the social exchange theory and the evolution of trust [21], a trust may increase because of continuous interaction during relationship stages. If a firm evaluates its relationship performance with a partner, the firm’s trust with the partner could enhance its trust during subsequent stages. Thus, this carryover effect should increase over time.
since the level of trust in B2B relationships is higher in later stages than in the initial stage. In line with these observations, the following hypothesis is proposed:

**Hypothesis 3 (H3). The carryover effect of trust from T1 to T2 increases if relationship stages shift over time.**

Similarly, firm performance at T2 should influence the same constructs at both T3 and T4 since firms usually monitor the sequence of their performance based on past performance [16]. Furthermore, these carryover effects should gradually increase due to increases in the original impact (i.e., trust (at T1) and firm performance (at T2)). This is because a negative performance may be a signal to make decisions regarding whether a firm should continue a relationship with its partner or not. However, if not, the firm is be likely to maintain the relationship with the partner firm over time. Therefore, the final hypothesis is given as follows:

**Hypothesis 4 (H4). The carryover effect of firm performance from T2 to T3 increases if a firm wants to maintain its relationship with its partner firm over time.**

### 3. Methodology

#### 3.1. Data Collection

A longitudinal study was designed to test the proposed model. In doing so, data were collected at four time points (T1, T2, T3, and T4), each separated by a six-month time lag. Although the use of one- or two-year lags in investigating B2B relationships has been widely accepted [16,37], the approach used in the current study is also acceptable because it focuses on start-up firms. We examine how firms are increasingly important in Korea owing to the rapid growth of new start-ups and the dynamic B2B relationship paradigm. In particular, these firms were more likely to establish relationships with their new partners, suggesting that start-up firms usually have the shortest B2B relationships [38], compared with conventional B2B relationships. The B2B relationships in this study had existed at least for 2 years when data collection began and continued to exist during subsequent data collection periods. Thus, it was possible to track each B2B stage in real time.

PMI is a major online research firm in South Korea that collects data through surveys from January 2019 to June 2020. Respondents with at least two-year relationships with their partners were selected. We operationally defined a partner as a key party (e.g., buyer or supplier), working together with a start-up firm to deliver success for both parties. However, respondents who had terminated their business relationships with their major partners (previous partners were originally considered to respond to the survey at T1) were excluded because their responses may have been biased, compared with the responses for the development and maintenance stages. In particular, all the respondents participated in subsequent surveys from T1 to T4 (e.g., the same respondents completed the same questionnaire surveys at T1, T2, and T3) and were asked to respond regarding the same selected partner during subsequent survey periods to capture the evolution of relationship stages.

PMI conducted the online surveys based on the sample framework. The original 2019 sample included 780 respondents. Due to difficulties with contacting the sample (e.g., email address changes, unopened email messages, etc.), the sample size was reduced to 712 respondents in mid-2019, to 608 respondents in early 2020, and to 542 respondents in mid-2020. Another 75 respondents were removed from the mid-2020 sample due to the dissolution of their relationships with their partners and turnover during subsequent survey periods. Thus, a total of 467 respondents were used to test the proposed model.

The data collected represents two types of industries: 293 (62.7%) from manufacturing sectors and 184 (37.3%) from service sectors. In the sample, 64% of the respondents were in managerial positions (36% were in sales positions), and 58% had relationships (with a particular partner who also responded to the surveys) for over three years (the mean of the relationship length = 3.02).
3.2. Measures

As shown in Table 2, all scale items were adapted from prior literature. Trust was captured using four items adapted from studies by Doney and Cannon [39] and Morgan and Hunt [40]. These items were measured using Likert scales ranging from 1 (“strongly disagree”) to 5 (“strongly agree”). Firm performance was measured using five items adapted from Vorhies and Morgan’s study [26]. These items were measured using a Likert scale ranging from 1 (“much worse than competitors”) to 5 (“much better than competitors”).

Table 2. Survey measures.

| Items                                                                 | Loadings  |
|----------------------------------------------------------------------|-----------|
|                                                                     | T1  | T2  | T3  | T4  |
| Trust (T1: CR = 0.95, AVE = 0.54; T2: CR = 0.96, AVE = 0.48; T3: CR = 0.94, AVE = 0.58) |     |     |     |     |
| This partner is not always honest with us (R).                       | 0.70 | 0.67| 0.69|     |
| We believe the information provided by this partner.                 | 0.78 | 0.63| 0.70|     |
| When making important decisions, this partner considers our          | 0.77 | 0.74| 0.77|     |
| welfare as well as its own.                                          |     |     |     |     |
| We trust that this partner has our best interests in mind.           | 0.68 | 0.70| 0.86|     |
| Firm performance (T2: CR = 0.97, AVE = 0.64; T3: CR = 0.97, AVE = 0.62; T4: CR = 0.95, AVE = 0.59) |     |     |     |     |
| Business unit profitability                                         | 0.73 | 0.76| 0.70|     |
| Return on investment (ROI)                                          | 0.77 | 0.73| 0.67|     |
| Return on sales (ROS)                                               | 0.86 | 0.67| 0.68|     |
| Market share growth relative to competitors                         | 0.83 | 0.95| 0.96|     |
| Growth in sales revenue                                             | 0.81 | 0.78| 0.78|     |

3.3. Control Variables

Selecting control variables was critical as this study only focused on two constructs; trust and firm performance. Thus, we selected relationship length because it is positively related to trust and firm performance [41]. We also selected industry type owing to the structure of the service industry. When compared with the manufacturing industry, the industry has many distinct characteristics and offers different performance [42]. The control variables utilized were relationship length (less than 3 years (coded 0) vs. over 3 years (coded 1)) and industry type (manufacturing (coded 0) vs. service sectors (coded 1)), both of which have been widely considered in B2B relationship research [16]. For example, if the relationship length is long, firm performance could be improved [43]. Moreover, researchers have emphasized that industry type should be controlled when multiple industries are included in the study [44]. Thus, a dummy variable was used to distinguish between the two controls, 0 and 1.

3.4. Comparison of Measurement

In subsequent surveys, the same respondents were asked the same questions regarding trust and firm performance. Table 3 reports the means, standard deviations, and coefficient alphas of each construct at T1, T2, T3, and T4, respectively. In particular, the analysis of variance (ANOVA) test showed that the means of two constructs changed significantly among T1 (or T2), T2 (or T3), and T3 (or T4) (p < 0.01), indicating that there were substantial changes in scores during the evolution of the B2B relationships. However, the coefficient alphas remained consistent during subsequent surveys.
### Table 3. Mean, alphas, and correlation matrix.

| Construct                | Mean (SD) | Alpha | 1   | 2   | 3   | 4   | 5   | 6   |
|--------------------------|-----------|-------|-----|-----|-----|-----|-----|-----|
| 1. Trust (T1)            | 3.58 (0.78) | 0.82  | 0.54|     |     |     |     |     |
| 2. Firm performance (T2) | 3.47 (0.78) | 0.89  | 0.52| 0.64|     |     |     |     |
| 3. Trust (T2)            | 3.44 (0.77) | 0.83  | 0.44| 0.29| 0.48|     |     |     |
| 4. Firm performance (T3) | 3.40 (0.78) | 0.88  | 0.35| 0.40| 0.29| 0.62|     |     |
| 5. Trust (T3)            | 3.52 (0.75) | 0.80  | 0.53| 0.34| 0.36| 0.49| 0.58|     |
| 6. Firm performance (T4) | 3.43 (0.78) | 0.86  | 0.36| 0.43| 0.48| 0.42| 0.51| 0.59|

Note: The numbers in bold are AVE values.

### 3.5. Common Method Bias

In the B2B context, trust and performance are highly correlated. To investigate common bias in surveys, we performed Harman’s single-factor to test [45] the correlation between the two constructs using CFAs on T2 data. We also tested two models: (1) a one-factor measurement model that hypothesized two constructs loaded on a single latent factor; and (2) a two-factor oblique model that assumed that the factors were freely correlated. Results showed that the one-factor model could not account for the variance in the model; however, the two-factor model fitted data were significantly better than the alternative model ($\Delta \chi^2 (2) = 58.803, p < 0.01$; $\Delta$AIC = 54.811). Other fit indices such as CFI, IFI, AIC, and RMSEA also exceeded an acceptable fit.

The chi-square difference ($\Delta \chi^2$) in SEM is analogous to the Sargan-Hansen test and the F-statistic since they test the overidentifying restrictions of the model. This suggests that the chi-square difference is useful for endogenous explanatory variables in SEM [46]. The results suggest that trust and performance are interrelated yet construct distinctly.

### 4. Results

A confirmatory factor analysis (CFA) was conducted to evaluate the measurement model using AMOS 23 (see Table 2). The CFA model provided an acceptable fit for the data ($\chi^2 = 840.104$, df = 309, $\chi^2$/df = 2.72, $p < 0.001$), and the model fit indices suggested an acceptable model fit (CFI = 0.95, NFI = 0.94, and RMSEA = 0.062). Factor loadings ranged from 0.63 to 0.96 and the average variance extracted (AVE) exceeded the recommended threshold of 0.5 for each construct, thus supporting convergent validity. Although AVE for trust at T2 was less than 0.5, we used the AVE (0.48) for trust at T2 as AVE values were near the 0.50 threshold [47]. This measure indicates that trust at T2 responds to the convergent validity via CFA. Finally, discriminant validity was assessed as suggested by Fornell and Larcker [48] and shown in Table 3. All AVEs exceeded the squared correlation between each pair of relationship constructs, thereby supporting discriminant validity.

#### 4.1. Model Evaluations with (and without) Control Variables

This study tested model evaluations with and without control variables because the structural equation modeling literature emphasizes the importance of control variables [49,50]. The model fit indices of the path model without control variables were as follows: $\chi^2 = 882.123$ (df = 312; $\chi^2$/df = 2.82; $p < 0.001$), CFI = 0.94, NFI = 0.93, and RMSEA = 0.066. These indices suggest a good model fit. The model fit indices of the path model with control variables were as follows: $\chi^2 = 1024.287$ (df = 354; $\chi^2$/df = 2.89; $p < 0.001$), CFI = 0.93, NFI = 0.92, and RMSEA = 0.072. These indices suggest an acceptable model fit. As shown in Table 4, one of the most interesting findings was that no significant difference was observed between coefficients with control variables and coefficients without control variables. The effects of control variables, such as relationship length and industry type, are likely to influence the relationship between independent and dependent variables in cross-sectional studies regarding B2B relationships; however, the effects of control variables were not significant in the context of longitudinal studies.
Table 4. Summary of path coefficients.

| Path                                      | Coefficient without Control Variables | t-Value | Coefficient with Control Variables | t-Value |
|-------------------------------------------|---------------------------------------|---------|-----------------------------------|---------|
| Trust (T1) → Performance (T2) (H1-H2)     | 0.61 ***                              | 8.59    | 0.62 ***                          | 8.36    |
| Trust (T2) → Performance (T3) (H1-H2)     | 0.26 ***                              | 4.65    | 0.26 ***                          | 4.59    |
| Trust (T3) → Performance (T4) (H1-H2)     | −0.01                                 | −1.73   | −0.01                             | −1.43   |
| Trust (T2) → Performance (T2)             | 0.07                                  | 1.27    | 0.22 *                            | 2.76    |
| Trust (T3) → Performance (T3)             | 0.22 **                              | 2.85    | 0.12 *                            | 1.69    |
| Trust (T1) → Trust (T2) (H3)              | 0.54 ***                              | 9.03    | 0.52 ***                          | 8.81    |
| Trust (T1) → Trust (T3) H3                | 0.06 ***                              | 5.78    | 0.06 ***                          | 5.58    |
| Trust (T2) → Trust (T3) H3                | 0.68 ***                              | 10.79   | 0.70 ***                          | 10.81   |
| Performance (T2) → Performance (T3) (H4)  | 0.29 ***                              | 6.81    | 0.30 ***                          | 6.8     |
| Performance (T2) → Performance (T4) (H4)  | 0.02 ***                              | 3.46    | 0.02 ***                          | 3.22    |
| Performance (T3) → Performance (T4) (H4)  | 0.75 ***                              | 10.63   | 0.75 ***                          | 10.62   |
| Performance (T2) → Trust (T3)             | −0.01                                 | −1.25   | −0.01                             | −1.57   |

Notes: * p < 0.05; ** p < 0.01, *** p < 0.001.

H1 predicted that trust at T1 would have a direct positive effect on firm performance at time T2. Both paths between trust (T1 & T2) and firm performance (T2 and T3) were significant (path coefficient = 0.62, p < 0.01; path coefficient = 0.26, p < 0.01, respectively); however, the path between trust (T3) and firm performance (T4) was not significant (path coefficient = −0.01, p > 0.05), indicating that H1 was partially supported. Regarding temporal effects, H2 predicted that the trust–performance link at both T2 and T3 would be higher than that at both T1 and T2. Interestingly, as shown in Table 5, this hypothesis was rejected because the changes in each path decreased over time. More specifically, the effect of trust on firm performance decreased over time.

Table 5. Changes in coefficients with control variables.

| Path                                      | Effect | Change in Paths | Δ Coefficient | Hypothesis | Support? |
|-------------------------------------------|--------|-----------------|---------------|------------|----------|
| Trust → Performance                       | Temporal | T1-T2 → T2-T3  | −0.36         | H2 (+)     | No (-)   |
|                                          | Temporal | T2-T3 → T3-T4  | −0.27         | H2 (+)     | No (-)   |
|                                          | Temporal | T2 → T3        | 0.15          |            |          |
| Trust → Trust                            | Carryover | T1-T2 → T2-T3 | 0.14          | H3 (+)     | YES      |
|                                          | Carryover | T1-T2 → T1-T3 | −0.48         | H3 (+)     | No (-)   |
| Performance                               | Carryover | T2-T3 → T3-T4 | 0.46          | H4 (+)     | YES      |
|                                          | Carryover | T2-T2 → T2-T4 | −0.27         | H4 (+)     | No (-)   |

Notes: All changes in the path are significant. To test hypotheses, we developed three hypotheses, H2, H3, and H4, with positive changes (+). However, there are four changes with negative directions (−). We conclude that these negative changes should be rejected [51]. In particular, two changes (0.14 and 0.46, p < 0.01) in paths are supported.

As shown in Table 5 and Figure 2, both the carryover effects during the evolution of B2B relationships were tested. H3 and H4 predicted that both trust (at T1) and firm performance (at T2) would have positive effects on the same constructs at T2 (trust) and T3 (firm performance), and that these carryover effects would increase over time with the evolution of B2B relationships. The results were quite interesting and showed the same pattern between trust and firm performance. Regarding the subsequent periods of B2B relationships (e.g., Trust: T1-T2→T2-T3; Firm performance: T2-T3→T3-T4), the carryover effects increased. In contrast, during the discontinuous periods of B2B relationships (e.g., Trust: T1-T2→T1-T3; Firm performance: T2-T3→T2-T4), the carryover effects remarkably decreased. These mixed carryover effects indicate that H3 and H4 were partially supported. Additionally, an unexpected finding was that firm performance (at T2) did not have a significant effect on trust (at T3). As shown in Figure 2a,b, positive firm performance (or negative firm performance) does not always affect a positive (or negative) trust during subsequent B2B relationship periods.
4.2. Effects of Control Variables

As shown in Table 6, the results were quite interesting. In particular, we found similarities and differences between the two control variables. The path coefficients for the two control variables depended on key constructs. For example, the effects of both control variables on trust were significant regardless of subsequent relationship periods, while the effects of these variables on firm performance were not significant. Furthermore, the effects of both industry type and relationship length on trust decreased over time. Additionally, at T3, a categorical regression analysis was conducted to determine which firm type had a significant effect on trust. As shown in Figure 3, the service industry had a greater effect on trust than the manufacturing industry owing to the people-intensive nature of services [52].
Table 6. Model evaluations with control variables.

| Path                  | Standardized Coefficient | Type       | Length |
|-----------------------|--------------------------|------------|--------|
| Control(s) → Trust (T1) | 0.21 **                  | 0.12 *     |
| Control(s) → Trust (T2) | 0.52 **                  | 0.22 **    |
| Control(s) → Trust (T3) | -0.03 **                | 0.01       |
| Control(s) → Performance (T2) | -0.08                   | 0.03       |
| Control(s) → Performance (T3) | 0                      | -0.01      |
| Control(s) → Performance (T4) | 0                      | 0.01       |

Notes: * p < 0.05; **, p < 0.01.

Figure 3. The effect of firm type on trust (T3). Note: 1 = manufacturing; 2 = services.

5. Discussion

5.1. Key Findings

This study examined how trust affected firm performance and provided robust evidence of how trust in B2B relationships evolved during subsequent relationship stages. Our findings showed that temporal and carryover effects changed significantly when the trust–performance linkage was dynamic. The B2B literature suggests that a complete understanding of the temporal dynamics of the trust–performance linkage helps to better predict and enhance B2B relationship practices. The findings showed that all carryover effects (trust and firm performance) increased over time. However, all temporal effects in the trust–performance linkage (e.g., trust (T2)–performance (T2) = 0.22 vs. trust (T3)–performance (T3) = 0.12; trust (T2)–performance (T3) = 0.26 vs. trust (T3)–performance (T4) = -0.01) decreased over time. Furthermore, the performance (T2)–trust (T3)–performance (T4) linkage is negative and insignificant. The results are in contrast with the social exchange theory and B2B stage models. Although the mixed-effects exist in B2B stage models, the dynamics of the trust–firm performance linkage can be useful if a firm predicts the direction of the current B2B stage.

5.2. Theoretical Implications

Drawing upon research regarding B2B-stage models, social exchange theory, and the evolution of trust, this study highlights the notion that testing the dynamics of B2B relationships can enhance the understanding of temporal changes in the trust–performance linkage and provides robust
evidence to demonstrate these temporal effects and mechanisms. Like in other B2B relationships, the trust–performance linkage is likely to decrease when the relationship between the two parties reaches a particular stage. Consistent with the relationship marketing and B2B stage model, our findings show that the temporal effects of the trust–performance linkage weaken toward the final stage of B2B relationships.

From a longitudinal perspective, the dominant view of B2B relationships research is that establishing strong trust-based relationships can help to achieve positive performance [2,7,21,40,53]. Consistent with this perspective, the findings in the current study indicate that trust has a positive effect on firm performance during the same period (e.g., trust (at T2)-performance (at T2) and the same relationship (at T3)); however, the effect of this relationship decreases over time. This study further makes an important suggestion about B2B relationships that trust-based relationships between the two parties is always healthy and beneficial [53]. The empirical findings show that trust may have an insignificant effect on firm performance during subsequent relationship periods at least in the start-up context. This study’s conjecture is that trust at T1 and T2 differs from trust (at T3) that is built over a long-term relationship. In other words, the effect of trust is unstable and decreases over time. These findings support Moorman et al.’s [22] finding that a partner’s trust decreases over time as B2B relationships evolve.

The study contributes to longitudinal literature by highlighting the temporal effects of trust on firm performance. Specifically, it adds to the extant literature on the distinction of temporal dynamics in B2B relationships. Due to the dynamic nature of trust, Akrout and Diallo [1] address the limitation of cross-sectional studies using a longitudinal research design. The trust dynamics in B2B relationships help to elaborate Akrout and Diallo’s findings [1], suggesting that trust is stage-dependent. Similarly, this study highlights the benefits of temporal dynamics as a tool in influencing organizational relationships, as suggested by Ekici [54]. Clearly, temporal dynamics are too complex to determine why and when firms continue or terminate their relationships. Despite the difficulties in understanding temporal dynamics, our findings indicate that both trust-based and performance-based temporal effects tend to decrease. In contrast, the carryover effects of both constructs (trust and firm performance) increase over time. In line with these observations, differences between temporal and carryover effects are noted in long-term B2B relationships. Both temporal and carryover effects do not move in the same direction during the subsequent B2B relationship stages.

5.3. Managerial Implications

The findings also provide evidence about the significance of trust associated with a firm type (or industry type). Compared with manufacturing start-ups, the role of the firm type is more important for service start-ups to establish trust. Specifically, it can come with uncertain outcomes of future performance. As a result, partners may consider aspects of the trust-based relationship that suggest a service organization is aligned with the partner’s future needs and goals [55]. Therefore, service organizations can maintain trust with their partners. Given the propensity of trust-based relationships, service organizations may play a substantial role in improving trust and enhancing positive performances. For example, Socar, the major firm in car-sharing services in Korea, collaborated with Hyundai Motor in 2018 to increase the value of revenue-generating services based on the existing strong trust between the two parties. Thus, managers can create shared value for positive performance if they have built trust with a partner during their B2B relationship.

The analysis reveals that the relationship between trust and performance decreases over stages. The desirable approach for managers is that firms with high performance derive benefit from B2B mature phases. Since the carryover effects of performance increase over stages, maintaining high performance with their partners is critical for sustainable relationships. While studies on the B2B relationship highlight the importance of affective trust during the B2B relationship stages [1,2,37], our empirical findings show that the overall effect of trust is limited and decreases over stages.
In contrast, the effect of firm performance as a calculative construct increases during these phases, suggesting the importance of managing performance at later stages.

6. Limitations and Directions for Further Research

While this study provides new insights regarding the temporal dynamics of B2B relationships, it also has several limitations. It focused primarily on the trust–performance linkage from a longitudinal perspective, but the relationship between trust and its outcomes involves several relevant factors. Thus, the findings may be limited to a complete understanding of firm performance in relation to trust outcomes. Future research should identify alternative ways to examine whether other possible events (e.g., conflict, temporary poor performance, economic shutdown due to COVID-19, etc.) could be involved in these dynamic settings. Furthermore, future research should work to distinguish between the levels of trust (e.g., high trust vs. low trust) during subsequent B2B relationship stages.

Since this study investigated the temporal dynamics of firms’ trust–performance linkages in the start-up context, future research should seek to replicate and extend our findings in other contexts to verify their generalizability. Although a better understanding of B2B relationships requires additional research, this study is the first step in capturing how trust affects firm performance over time.

The start-ups were useful for a complete understanding of B2B relationships. Some concerns are remarked about relationship stages as B2B relationship stages vary from the developing stage to the maturing stage. Thus, future studies should focus on different relationship stages to elaborate on the current findings of the study.

Lastly, future research should consider associated social outcomes of the trust–performance linkage because firms often consider their performance as a future-oriented view of their social ability to cope with changes in performance. In this study, it was noted that social performance is necessary for the evolution of B2B relationship stages, moving from prioritizing financial performance in the initial and development stages to focusing on the robustness of social performance in the maintenance stage. Future studies should consider the cultural context, suggesting that the relationship between trust and firm performance varies across cultures (e.g., collectivist vs. individualistic) and institutional environments (formal or informal dominated).

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