Knowledge Sharing and Co-Opetition: Turning Absorptive Capacity into Effectiveness in Consumer Electronics Industries

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Abstract: Despite the literature regarding the potential effects of absorptive capacity on performance, a problem in the extant literature is that few researchers have reported on how such potential effects could be realized. To resolve the problem, we argued that there are chained mediating relationships among other factors in the absorptive-performance relationship. Data were collected from 522 new product development teams in top 30 consumer electronics manufacturers in Taiwan. Structural equation modeling results revealed that: first, absorptive capacity positively influences team knowledge sharing, which positively influences both cooperation and competition (sharing-stimulated co-opetition), which then lead to increased team effectiveness. This study is among the first to contribute by investigating absorptive capacity’s impact on team-level effectiveness; it achieved this by examining the abovementioned mediating relationships. Practically, we found that absorptive capacity could be influential on team effectiveness, if the team exercise good knowledge sharing activities that in turn stimulate co-opetition relations among workers. Collectively, the dynamics of absorptive capacity, knowledge sharing, and co-opetition can form a positive circle for a team’s sustainable effectiveness.

Keywords: absorptive capacity; knowledge sharing; co-opetition; sustainable team effectiveness; structural equation modelling

1. Introduction

A considerable number of studies have addressed team effectiveness [1–7]. With increasing attentions toward knowledge-based organizational value creation and advantages [8], scholarly interests have been put under the influence of learning related factors on team effectiveness [9,10]. Absorptive capacity is among the most critical factors [11–13]. By definition, absorptive capacity is an organization’s (or its internal unit’s) capability to identify, acquire, assimilate, and apply external knowledge [11,13]. In such a sense, absorptive capacity is a base of external knowledge internalization for improving team effectiveness [14].
Despite the rich literature, however, few papers have addressed how the complex mediating factors intervene in the absorptive capacity-team effectiveness relationship. Even less have articulated on such effectiveness’s sustainability (i.e., sustainable effectiveness). In this present study, we argue that absorptive capacity should be better studied from a dynamic perspective [13], to link with its implications for team effectiveness sustainability. Such a research objective demands an in-depth understanding of the mediating factors that might transform the effects of absorptive capacity and realize more endured effectiveness. While people increasingly believe that absorptive capacity may influence team effectiveness positively, investing in absorptive capacity can only ensure its potential [13,15]. Thus, we need to understand more of the detailed mediating processes to ensure the effects of absorptive capacity on effectiveness and with no waste of resources (e.g., focusing on non-functional mechanisms).

To fill up such research gaps, we focused on literature of knowledge- and social-based interactions (e.g., [16–20]) to investigate knowledge sharing and co-opetition as two interrelated, chained mediating mechanisms that may turn the effect of absorptive capacity into sustainable team effectiveness. Knowledge sharing and co-opetition are necessary components for successful organizational learning [21–24]. Since a general investigation of the absorptive capacity cannot ensure such a capacity’s functionality for absorbing knowledge from every external source equally [25], knowledge-oriented interactions (i.e., knowledge sharing and co-opetition here) among members are very critical for team working. On the one hand, knowledge sharing is an important subsequent activity for absorptive capacity to spread and leverage the absorbed knowledge into group dynamics and tasks implementation [22]. On the other hand, co-opetition can significantly affect ongoing group knowledge activities. The concept of “co-opetition” is defined here as the co-existence of cooperative and competitive interactions between organizational members, which might demand members to coordinate with potential competitors in promoting collective performance [26–28]. While existing studies cared more about the influences of social relations on knowledge sharing [14,29], less have studied the effects of knowledge sharing on social relations for absorptive capacity, it is more closely related to knowledge activities than other organizational activities. Hence, when we assume that knowledge and social interactions are key mediators between absorptive capacity and performance, it would be more reasonable to study so with a “knowledge sharing → co-opetition” path, rather than a “co-opetition → knowledge sharing path.”

2. Theory and Hypotheses

2.1. Absorptive Capacity

The most accepted concept of absorptive capacity is the capability of an organization to identify, acquire, assimilate and apply external knowledge by its internal units (e.g., Research and Development (R&D) department or projects), in order to explore and realize more sustainable values of such knowledge [11,13,30–32]. Absorptive capacity is a dominant source of competitive advantage in learning organizations [13,15,33,34], which emphasize the understanding of the often tacit and contextualized knowledge gained through social interactions.

There are internal and external factors that may affect an organization’s absorptive capacity. Cohen and Leventhal [11] pointed out that employees’ individual absorptive capacity, an organization’s prior knowledge base, and R&D investments preliminarily formed a foundation for organizational absorptive capacity. Mariano and Pilar [35] further added strategic dimensions like competitive positioning and diverse knowledge structure to measure that absorptive capacity that can directly and indirectly affect a firm’s innovative efforts. Recently, absorptive capacity has been discussed alone with relevant themes such as knowledge characteristics [36–39], knowledge transfers [40–42], value co-creation [43], and business performance [14].

As has been increasingly noticed, absorptive capacity is not necessarily feasible as a predictor for organizational performance—it might only be a potential facilitator for performance as it only
predicts the potential capacity for companies to internalize and then utilize the knowledge learnt [15]. From such a view, it is necessary to investigate the potential realizing factors that mediate between absorptive capacity and performance or effectiveness. [13].

2.2. Knowledge Sharing

Based on the discussions in the section above, absorptive capacity does not only construct competitive advantages, but it should also stimulate collaborative value creation through joint activities such as knowledge sharing and co-opetition [44]. In this section, we discuss knowledge sharing first. Knowledge sharing could be a critical factor that could turn absorptive capacity into realized effectiveness. Knowledge sharing can be categorized into knowledge searching and transferring procedures [18]. Szulanski [42] argued that organizations can create significant values from the transfer of internal knowledge by overcoming the barriers leading to stickiness of knowledge flow. Organizations stimulate knowledge sharing because they wish to have individual knowledge transformed onto organizational level and make use of it [22]. Given the often dispersed knowledge distribution within an organization [42], knowledge sharing as a mechanism is necessary for aligning interests and specialties for better integration [45,46]. For completing such goal, organizations must increase motivation [47], encourage commitments [48], stimulate behavioral intentions [49], set actionable infrastructure [50], maintain employment relations [51], and connect social networks [14,52], in order to lead people to nurture climates and make commitments in knowledge sharing activities [53].

Senge [54] pointed out that knowledge sharing is more than acquiring information, but it also needs members to internalize the acquired new knowledge. In such a proactive sense, knowledge sharing increase group effectiveness by enabling correct uses of knowledge resources [55]. Absorptive capacity is critical to reflects on such actions to value, assimilate and acquire knowledge from external sources such as suppliers, customers, competitors, and alliance partners [11,40]. George et al. [13] explained absorptive capacity as the degree to which firms can leverage and apply knowledge internalized. Hendriks [56] suggested that absorption of knowledge is a key part of knowledge sharing. In sum, absorptive capacity will directly affect knowledge sharing [56], because knowledge processing activities could be better motivated and implemented [57].

Hypothesis 1 (H1). Absorptive capacity has a positive influence on knowledge sharing in a firm.

2.3. Co-Opetition

Co-opetition focuses on combinations of cooperative and competitive types of interactions between business individuals and organizations. Cooperation and competition have both been emphasized as a means of stimulating coordinative task progresses of organizational actors involving in long-term relationships [58]. Raza-Ullah et al. [59] argued that co-opetition parallels a dual relationship of cooperation and competition. Brandenburger and Nalebuff [58] suggested that the value appropriation by companies depends on the inter-dependence between the firm and its stakeholders, forming a “value net”. In nature, people or organizations in a co-opetition relationship pursue a positive-sum game and interests sharing [60,61]. Yami and Nemeh [62] noted that co-opetition is an innovative element that can facilitate innovation through network coordination. Bengtsson and Kock [63] described co-opetition as both vertical and horizontal relations involving multiple parties. Osarenkhoe [64] highlights the complementarity nature of co-opetition strategy and its impact on collective strategies for value generation among business actors.

Co-opetition relationship focuses on obtaining benefits from cooperative interaction with competitor [65]. Co-opetition can shorten product life cycles, stimulate new technology learning, improve innovation and increase market performance [66–68]. However, co-opetition has also been viewed as potentially risky for organizations [68], which means such a relationship might also lead to co-destruction [39,42], in addition to co-creation.
Knowledge sharing could both influence cooperation and competition, creating the dynamics of co-opetition in teams. On the one hand, meaningful cooperation relies on partners of different capabilities sharing with one another [58], as knowledge sharing is inherently knowledge resource exchange behaviors involving the actors, knowledge contents, organizational context, appropriate media, and societal environment [54]. On the other hand, however, knowledge is also a precious resource that might draw competition for such a resource [65]. Moreover, from a capability growth viewpoint, knowledge sharing can also increase competition intensity and potential, because of the simultaneous increase of knowledge levels of all members. In such a context, co-opetition can happen when members collectively deal with knowledge resources in embedded social structures. Summing up, we propose that knowledge sharing simultaneously changes both the relational dynamics of cooperation and competition among team members.

**Hypothesis 2 (H2).** Knowledge sharing has a positive influence on cooperation.

**Hypothesis 3 (H3).** Knowledge sharing has a positive influence on competition.

From a co-opetition perspective, simultaneous increase in cooperation and competition level could lead to positive consequences in team effectiveness. On the one hand, cooperation is a set of joint behaviors to obtain shared interests from interacting with other members [69–71]. To mention a few, those behaviors include integer coordination, problem solving, and co-creation [39,72,73]. Cooperation positively influences incentive for team members to work aggressively for high-quality production/service line, technological diversity and business activities that all facilitate team effectiveness [74].

On the other hand, despite the possibility that competition will harm organization and acceleration tension climate [75,76], competition is an important factor that might generate positive effects in social interactions. For example, competition against external forces leads to overall cohesion of organizational members appropriately. Also, a certain degree of constructive competition can motivate employees to improve their own working awareness, attitudes and abilities that are good for collective effectiveness [77,78].

**Hypothesis 4 (H4).** In the context of co-opetition, cooperation has a positive influence on team effectiveness.

**Hypothesis 5 (H5).** In the context of co-opetition, competition has a positive influence on team effectiveness.

3. Methodology

3.1. Sample and Data Collection

As is commonly accepted, the consumer electronics market in Asia has been the driving force of the global consumer electronics market’s growth (Global Consumer Electronics Market Forecast 2022, [http://www.rncos.com/Report/IM848.htm](http://www.rncos.com/Report/IM848.htm), last retrieved: 2019/7/14). In such a back-drop, the Asia consumer electronics market requires more knowledge and network based innovation, in order to keep such role of stimulating the global market’s evolution in the long term. We contacted the top 100 companies characterizing in new product development in consumer electronics manufacturing industry in Taiwan. These companies were sampled on the basis of an annually released authoritative list from a famous Chinese business magazine—the Common Wealth ([https://www.cw.com.tw/](https://www.cw.com.tw/))—which has been adopted as a sampling structure in international studies of Taiwan industries. Taiwan is an economy composed of many innovative firms that emphasize the parallel development of knowledge capitals, organizational capabilities, and human resource management issues [79,80], thus it is suitable for conducting the present study. Questionnaires were distributed to 1000 teams of the top 100 consumer electronics companies of the list mentioned above; then 522 valid team responses from 30 of the
100 firms were obtained, resulting in a response rate of 52.2%. Raters are formal team leaders (e.g., department directors, project managers, and so forth) for they are highly knowledgeable persons who can represent and provide valid answers to our questions regarding to the situation of the team processes. Note that most of the companies listed in the database are established ones that fall outside the definition of small-and medium-sized companies. This might clarify more the issue of generalizability in our analytic results.

3.2. Measurement

The study adopted well-developed scales, suggesting high content validity. A pre-test was conducted with 46 questionnaires and the results showed good instruments were applied in this study. The research used 7-point Likert-scales (from 1 = strongly disagree to 7 = strongly agree) questionnaire items. Cooperation was measured with a 3-item scale adapted from Tjosvold, Hui and Yu [81]. Competition was measured with a 3-item scale adapted from the Tjosvold, Hui and Yu [81]. Knowledge sharing was measured using five items adapted from the works of Lin [82]. Absorptive capacity was measured with five items adapted from the Kwok and Gao [83]. Team effectiveness was measured base on the 4-item adapted from Edmondson [84]. See Appendix A for all questionnaire items.

4. Results and Discussion

Statistically we adopted SPSS and AMOS 18 programs to analyze the measurement and path models. Table 1 displays the means, standard deviations, and the correlations among core variables. The study then examined the convergent validity (reliability, composite reliability (CR), and average variance extracted (AVE)) and discriminant validity by comparing the relationship between constructs and items [85].

Table 1. Descriptive statistics.

<table>
<thead>
<tr>
<th></th>
<th>Mean</th>
<th>S.D.</th>
<th>AC</th>
<th>KS</th>
<th>COOP</th>
<th>COMP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Absorptive Capacity</td>
<td>5.28</td>
<td>1.05</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Knowledge sharing</td>
<td>5.15</td>
<td>0.96</td>
<td>0.59</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cooperation</td>
<td>4.97</td>
<td>1.01</td>
<td>0.55</td>
<td>0.64</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Competition</td>
<td>4.93</td>
<td>1.09</td>
<td>0.39</td>
<td>0.42</td>
<td>0.41</td>
<td></td>
</tr>
<tr>
<td>Team Effectiveness</td>
<td>4.77</td>
<td>1.042</td>
<td>0.59</td>
<td>0.58</td>
<td>0.59</td>
<td>0.54</td>
</tr>
</tbody>
</table>

N = 522.

The analysis of structural equation modeling included two steps. First, the overall research model must be examined in terms of model fit [85]. The model fit is good ($\chi^2$ (522) = 444.6; Comparative fit index (CFI) = 0.961; Root mean square error of approximation (RMSEA) = 0.058; Goodness-of-fit index (GFI) = 0.892; Adjusted goodness-of-fit index (AGFI) = 0.877], suggesting the model is appropriate for further examinations [86]. Second, convergent validity of the observable variable and latent variable may be assessed with item reliability, combination reliability (CR), and average variance extracted (AVE) [87,88]. All individual observable items’ reliability is higher than 0.5, showing correct reflection on respective latent variables [85]. Each dimension achieved scores of combination reliability of over 0.5, indicating the measures were reliable. Table 2 shows the internal consistency for all the dimensions. All items within the model tend to have a high coefficient of variance extracted correlation.
Table 2. Model analysis results.

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Alpha If Item Deleted</th>
<th>Cronbach’s α</th>
<th>Standard Factor Loading (λ)</th>
<th>Error (δ/ε)</th>
<th>CR</th>
<th>AVE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Absorptive capacity</td>
<td>0.92</td>
<td>0.92</td>
<td>0.805</td>
<td>0.352</td>
<td>0.922</td>
<td>0.703</td>
</tr>
<tr>
<td>B11</td>
<td>0.909</td>
<td></td>
<td>0.857</td>
<td>0.266</td>
<td></td>
<td></td>
</tr>
<tr>
<td>B12</td>
<td>0.897</td>
<td></td>
<td>0.877</td>
<td>0.231</td>
<td></td>
<td></td>
</tr>
<tr>
<td>B13</td>
<td>0.894</td>
<td></td>
<td>0.832</td>
<td>0.308</td>
<td></td>
<td></td>
</tr>
<tr>
<td>B14</td>
<td>0.901</td>
<td></td>
<td>0.819</td>
<td>0.329</td>
<td></td>
<td></td>
</tr>
<tr>
<td>B15</td>
<td>0.906</td>
<td></td>
<td>0.819</td>
<td>0.329</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Knowledge sharing</td>
<td>0.899</td>
<td>0.900</td>
<td>0.643</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>KS1</td>
<td>0.882</td>
<td></td>
<td>0.789</td>
<td>0.377</td>
<td></td>
<td></td>
</tr>
<tr>
<td>KS2</td>
<td>0.876</td>
<td></td>
<td>0.807</td>
<td>0.349</td>
<td></td>
<td></td>
</tr>
<tr>
<td>KS3</td>
<td>0.869</td>
<td></td>
<td>0.828</td>
<td>0.314</td>
<td></td>
<td></td>
</tr>
<tr>
<td>KS4</td>
<td>0.879</td>
<td></td>
<td>0.789</td>
<td>0.377</td>
<td></td>
<td></td>
</tr>
<tr>
<td>KS5</td>
<td>0.878</td>
<td></td>
<td>0.795</td>
<td>0.368</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Competition</td>
<td>0.85</td>
<td>0.857</td>
<td>0.667</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>COM1</td>
<td>0.791</td>
<td></td>
<td>0.807</td>
<td>0.349</td>
<td></td>
<td></td>
</tr>
<tr>
<td>COM2</td>
<td>0.773</td>
<td></td>
<td>0.837</td>
<td>0.299</td>
<td></td>
<td></td>
</tr>
<tr>
<td>COM3</td>
<td>0.821</td>
<td></td>
<td>0.805</td>
<td>0.352</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cooperation</td>
<td>0.893</td>
<td>0.899</td>
<td>0.748</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CO1</td>
<td>0.927</td>
<td></td>
<td>0.867</td>
<td>0.248</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CO2</td>
<td>0.923</td>
<td></td>
<td>0.898</td>
<td>0.194</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CO3</td>
<td>0.932</td>
<td></td>
<td>0.828</td>
<td>0.314</td>
<td></td>
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</tr>
<tr>
<td>Team effectiveness</td>
<td>0.865</td>
<td>0.869741</td>
<td>0.626</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TIM1</td>
<td>0.852</td>
<td></td>
<td>0.746</td>
<td>0.443</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TIM2</td>
<td>0.807</td>
<td></td>
<td>0.821</td>
<td>0.326</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TIM3</td>
<td>0.808</td>
<td></td>
<td>0.847</td>
<td>0.283</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TIM4</td>
<td>0.843</td>
<td></td>
<td>0.746</td>
<td>0.443</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The study used AVE for measuring discriminant validity. All of the AVE of all latent variable is greater than their correlation coefficient squares, demonstrating a good discriminant validity [87]. Before the structural equation modeling was carried out, the issue of multi-collinearity between latent variables needs to be clarified. There was no inter-variable correlation coefficient that is greater than 0.8, indicating no potential threat in multi-collinearity [88].

Note that we chose covariance-based SEM, rather than PLS SEM, in the reason that we wish to set a higher standard of the sampled data’s distribution for testing [87]. Also, some initial evidence showed that the CB SEM is more powerful when analyzing a sample number larger than 100 [89]. SEM results for evaluating the overall model fit follow: $\chi^2$ (887) = 1424.35; Comparative fit index (CFI) = 0.908; Root mean square error of approximation (RMSEA) = 0.066; Root mean square residual (RMR) = 0.106; Goodness-of-fit index (GFI) = 0.908; Adjusted goodness-of-fit index (AGFI) = 0.883, all demonstrating a nicely fitted dataset.

Figure 1 and Table 3 showed that absorptive capacity positively influences on knowledge sharing ($\gamma_{11} = 0.61$), supporting Hypotheses 1. Some existing studies posit that knowledge sharing is important for increasing absorptive capacity, while there is also empirical evidence showing that absorptive capacity might leave ‘impact on knowledge sharing’s effects on organizational consequences [14]. Others perceive that absorptive capacity is a part of knowledge transfer and sharing [42,90]. The result in our study directly confirmed that absorptive capacity influences knowledge sharing in organizations. Integrating all, the relationship between absorptive capacity and knowledge sharing may be causally reciprocal.
Further, knowledge sharing has positive effects on both cooperation ($\beta_{11} = 0.700$) and competition ($\beta_{22} = 0.520$), which supported Hypotheses 2 and 3 well. Finally, cooperation ($\beta_{31} = 0.510$) and competition ($\beta_{32} = 0.334$) simultaneously have positive impacts on team effectiveness in supporting Hypotheses 4 and 5. Such an interesting result told us that encouraging intra-organizational knowledge sharing both stimulate more cooperative opportunities but also level up the tension among knowledge-enabled employees who benefit from knowledge sharing. Fortunately, both cooperation and competition eventually lead to increased team effectiveness, making the co-opetition stimulated by knowledge sharing positive in nature.

For further distinguishing the direct and indirect effects, we found that absorptive capacity’s indirect effect on team effectiveness is 0.323 (total effect = 0.323). Knowledge sharing does not have a direct effect on team effectiveness, but it only has an indirect effect of 0.535 (total effect 0.535). Overall, all of the hypothesized paths of influences were statistically significant and supported.

Table 3. Direct and indirect effects on team effectiveness.

<table>
<thead>
<tr>
<th></th>
<th>Direct Effect</th>
<th>Indirect Effect</th>
<th>Total Effect (Direct + Indirect)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Absorptive capacity</td>
<td>-</td>
<td>0.2188 + 0.1042 = 0.323</td>
<td>0.323</td>
</tr>
<tr>
<td>Knowledge sharing</td>
<td>-</td>
<td>0.3610 + 0.17368 = 0.535</td>
<td>0.535</td>
</tr>
<tr>
<td>Cooperation</td>
<td>0.510</td>
<td>-</td>
<td>0.510</td>
</tr>
<tr>
<td>Competition</td>
<td>0.334</td>
<td>-</td>
<td>0.334</td>
</tr>
</tbody>
</table>

Existing studies tentatively proposed the effect of co-opetition on organizational outcomes [27], but few have statistically examined such effects. We found that the co-existence of cooperation and competition do facilitate team effectiveness. Furthermore, we highlighted that such co-existence is stimulated by absorptive capacity leveraged knowledge sharing. Note, however, our results also showed that the effect of competition must be less than cooperation. This is reasonably coherent with arguments and findings in previous studies that caution against the use of conflict and competition [81]. All in all, competition must be in good use and must not suppress the functionality of cooperation, when transforming the effect from knowledge sharing.

5. Conclusions

The study of absorptive capacity is a very promising field in Business and Management Research at an organizational level. However, the analysis of absorptive capacity on team effectiveness has not been systematically studied, despite its importance. The present study is among the first to explore the processing path/mechanisms that transform the effects of absorptive capacity into team effectiveness. The study concludes that some mediating factors (e.g., the knowledge sharing stimulated co-opetition...
in this study) could mediate and transform absorptive capacity into realized collective effectiveness. Theoretical and practical implications follow.

**Implications**

This paper contributes by extending absorptive capacity’s implications from organizational to a team context, arguing that the absorptive capacity of a team is also critical in achieving good consequences (i.e., the effectiveness here). Theoretically, more team-level outcomes could be studied from the perspective of absorptive capacity in the way we adopted in this study. Indeed, this study implicates that the effects of absorptive capacity on team-level consequences are worth studying as we consider the mediating factors, as well as the chain relationships among these factors.

Moreover, such results also contribute to knowledge sharing literature, where most extant studies have examined relational factors (i.e., cooperation or competition) as knowledge sharing’s antecedents [20]. The results here demonstrated that knowledge sharing is also influential on co-opetition. Per such a result, we added that the relationship between knowledge sharing and social interactions (e.g., co-opetition) is reciprocal in nature—they are both causes and ends for each other. Further empirical studies should consider such a nature into research designs. Furthermore, our results demonstrated that knowledge sharing’s effects on competition are different from that on cooperation; and that the effect of competition on effectiveness is different from cooperation’s. Such results lead us to be the first to propose that: although the co-existence of competition and cooperation has been validated, further studies are still needed to look into the proportional balances between competition and cooperation when they co-exist.

In terms of practical implication, first, we resolve a paradoxical question: why do some teams that invest in expanding absorptive capacity [21] not achieve a good consequence, while others do? To answer this question, we found evidence that absorptive capacity does not impact on team effectiveness directly, but through increased level of co-opetition stimulated by knowledge sharing. Practitioners should understand that constructing a good knowledge sharing mechanism and developing co-opetition relations is complementary for the efforts in leveling up absorptive capacity.

Furthermore, human resource management practices should assist the development of the absorptive capacity, knowledge sharing, and co-opetition for generating better team effectiveness. Human resource management is an important cornerstone for building knowledge management to improve organizational competitive advantages [91], whether the organizations are small or big, newly ventured or mature, local or international, in traditional or high-tech industries [45,92–95]. Based on the results of the present study, human resource management practices for team-working should be designed more specifically for increasing absorptive capacity, enabling knowledge sharing, and balancing cooperation and competition among members, in order to achieve good team effectiveness [16,22,23,58]. For example, when selecting incoming team members, managers should not just select those whose knowledge is needed for the team, but they should also consider those who are more willing to, and capable for, learning and applying external knowledge bases, sharing their findings in such a learning and application journey to colleagues or whomever might keep a constant cooperative or competitive (or both) relationship. Further, when designing rewards or incentives, members who do better in the abovementioned should be recognized, not just those who are rated better in objective indicators for “performance.” Formal or informal relational practices to enable members to maintain a healthy social dynamics of co-opetition should be constructed. For example, speeches, workshops, or social skills training to instill the concept and importance of co-opetition; rewarded competition between colleagues who have not been in competitive relationships; or informal gatherings for those who might be perceived or known as more competitive members, are all nice practices that could be adopted.

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**Conflicts of Interest:** The authors declare no conflict of interest.

**Appendix A**

**Table A1. Measurement.**

<table>
<thead>
<tr>
<th>Construct</th>
<th>Variables</th>
<th>Questionnaire Items</th>
<th>References</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Cooperation</strong></td>
<td>CO1</td>
<td>Team members encourage a &quot;we are in it together&quot; attitude.</td>
<td>Adapted from Tjosvold, Hui and Yu [81] Cooperative Team-working</td>
</tr>
<tr>
<td></td>
<td>CO2</td>
<td>Team members seek a solution that will be good for all of us.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>CO3</td>
<td>Team members combine the best of position to make an effective decision.</td>
<td></td>
</tr>
<tr>
<td><strong>Competition</strong></td>
<td>COM1</td>
<td>Team members demand that others agree to their position.</td>
<td>Adapted from Tjosvold, Hui and Yu [81] Competition inventory of teams</td>
</tr>
<tr>
<td></td>
<td>COM2</td>
<td>Team members want others to make concessions but do not want to make concessions themselves.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>COM3</td>
<td>Team members treat conflict as a win-lose contest.</td>
<td></td>
</tr>
<tr>
<td><strong>Knowledge sharing</strong></td>
<td>KS1</td>
<td>I share my job experience with my co-workers.</td>
<td>Adapted from Lin’s [48] Tacit knowledge sharing</td>
</tr>
<tr>
<td></td>
<td>KS2</td>
<td>I share my expertise at the request of my co-workers.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>KS3</td>
<td>I share my ideas about jobs with my co-workers.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>KS4</td>
<td>I will always provide my know-where or know-whom at the request of other organizational members.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>KS5</td>
<td>I will try to share my expertise from my education or training with other organizational members in a more effective way.</td>
<td></td>
</tr>
<tr>
<td><strong>Absorptive capacity</strong></td>
<td>B11</td>
<td>I can use physical and/or IT applications very well if I have only software manuals for reference (EFF1)</td>
<td>Adapted from Park et al. [95]'s Individuals perceived absorptive capacity for assimilating ERP systems</td>
</tr>
<tr>
<td></td>
<td>B12</td>
<td>I can use physical and/or IT applications very well if I can call someone else to solve my problems (EFF2)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>B13</td>
<td>I can use physical and/or IT applications very well if I had a lot of time (EFF4)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>B14</td>
<td>I am qualified enough to perform tasks using physical and/or IT applications (EFF5)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>B15</td>
<td>I have superior skills and capabilities to perform tasks using physical and/or IT applications compared to other colleagues (EFF7)</td>
<td></td>
</tr>
<tr>
<td><strong>Team effectiveness</strong></td>
<td>TIM1</td>
<td>Recently, this team seems to be &quot;slipping&quot; a bit in its level of performance and accomplishments.</td>
<td>Adapted from Edmondson [83] Team performance</td>
</tr>
<tr>
<td></td>
<td>TIM2</td>
<td>Those who receive or use the work this team does often have complaints about our work.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>TIM3</td>
<td>Quality errors occur frequently in this team.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>TIM4</td>
<td>Others in the company who interact with this team often complain about how it functions.</td>
<td></td>
</tr>
</tbody>
</table>

**References**

5. Gilson, L.L.; Mathieu, J.E.; Shalley, C.E.; Ruddy, T.M. Creativity and Standardization: Complementary or Conflicting Drivers of Team Effectiveness? *Acad. Manag. J.* 2005, 48, 521–531. [CrossRef]


82. Lin, C.P. To share or not to share: Modeling tacit knowledge sharing, its mediators and antecedents. *J. Bus. Ethics* 2007, 70, 411–428. [CrossRef]

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