# Examining Relationship among Intellectual Capital, Internal Collaboration, External Collaboration and Distribution Performance

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## Abstract

**Purpose:** This study aims to examine the effect of intellectual capital on both internal and external collaboration and its impact on distribution performance enhancement in public sector. **Research design, data, and methodology:** The study applied quantitative approach with the help of AMOS Structural Equation Modelling. The unit of analysis is the Indonesian local government. The research involved 430 leaders from local government agencies as respondents. **Results:** This study found that intellectual capital positively influences both internal and external collaboration as well as distribution performance. Furthermore, the current research confirms the different effect of internal collaboration and external collaboration on distribution performance; internal collaboration positively affects distribution performance, while the external one does not. Eventually, internal collaboration mediates the indirect effect of intellectual capital on distribution performance, whereas the external collaboration does not. **Conclusions:** This study strengthens and complements the lean stream by confirming the role of intellectual capital as critical antecedent of internal collaboration, external collaboration, and distribution performance. Moreover, this research underlines the critical role of internal collaboration as the intercourse which supports distribution performance enhancement in public sector. Lastly, the study highlights the benefits of external collaboration in distribution practice if appropriately and wisely managed.

**Keywords :** Intellectual Capital, Internal Collaboration, External Collaboration, Distribution Performance, Public Sector.

**JEL Classification Code**: D30, H11, H70, J24.

## 1. Introduction

In this era of dynamic and progressive change, organizational resources are crucial to all types of organizations. However, some organizations are unable to obtain the necessary resources individually and may need to collaborate to solve the problem (Stank, Keller, & Daugherty, 2001; Shou, Prester, & Li, 2018). Thus, collaboration contributes to the availability of organization tangible and intangible resources. Ample prior studies have confirmed the important role of collaboration as a critical antecedent of intellectual resources (Subramaniam &

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Youndt, 2005; Joia & Malheiros, 2009; Fereira & Franco, 2017), which largely determines the achievement of any entity (Nonaka, Toyama, & Nagata, 2000).

On the other hand, some prior studies have different perspectives about the link of both variables and oppositely confirm intellectual capital instead as a driver of collaboration (Shou et al., 2018; Papaioannou, Mohammed, Despoudi, Saridakis, & Papadopoulos, 2020). This meager stream assumes that collaboration is basically an activity of knowledge diffusion among the embroiled entities. Therefore, intellectual resources within the participants significantly affect the collaboration quality. Moreover, the stream proposes that the collaboration ability of any organization is largely determined by the quality of the intellectual capital owned by the organization.

These minority views have provided empirical evidence regarding the important contribution of intellectual capital to collaboration (Shou et al., 2018; Saengon, Maneechote, & Sawasdee, 2019; Papaioannou et al., 2020). Nevertheless, the research is still incomprehensive; prior studies emphasize only the effect of intellectual capital on external collaboration, which does not cover the effect of this predictor on internal collaboration between departments within the same organization concurrently.

In this matter, the study requires completion regarding that internal and external collaboration are equally important. In certain types of organizations, especially with complex multidivisional, public organization, the role of internal collaboration has become critical and no less important than the external one, mainly to align strategy and to guide common goals achievement (Paagman, Tate, Furtmueller, & de Bloom, 2015). Moreover, internal, and external collaboration are integral and interconnected processes. Hence, in real-life, collaboration does not only occur between independent organizations but at the same time also between work units or departments within an organization. In short, the current study, which reexamines the influence of intellectual capital on internal and external of collaboration concurrently, is necessary.

Besides that, only few studies discuss collaboration in public sector (Hartley, Sorensen, & Torfing, 2013). Furthermore, the results of prior research regarding the contribution of external collaboration on performance in distribution management are inconsistent. Some research confirms the critical role of external collaboration on distribution performance (Achuora, Arasa, Nzioki, Ochiri, & Muangangi, 2013; Nikol'chenko & Lebedeva, 2017). On the other hand, some studies highlight the failure of external collaboration (Teece, 2000; Ostrander & Chapin-Hogue, 2011; Choi & Hwang, 2015). In this matter, the debate is raised, and further research is needed. Eventually, research that discusses the relationship between intellectual capital and distribution performance is still limited (Wudhikarn,

Chakpitak, & Neubert, 2018); likewise research that focuses on the link between internal collaboration and distribution performance (Ho, Kumar, & Shiwakoti, 2019).

To fill these gaps, this study examines the effect of intellectual capital on both types of collaboration, namely internal and external collaboration synchronously and try to figure out the impact on public service distribution performance enhancement, especially in Indonesian regional governments. Research that raises the topic of Indonesian public sector performance enhancement especially at the local government level is critical and necessary. According to Wardhani, Rossieta, and Martani (2017), recently Indonesian local government agencies are disable to achieve optimal public service performance.

## 2. Literature Review

### 2.1. Intellectual Capital

Some studies have defined intellectual capital. Youndt, Subramaniam, and Snell (2004) define intellectual capital as the aggregate sum of all organizations' knowledge asset which produces values and generates competitive advantage. Roos (2005) describes intellectual capital as all knowledge resources in non-monetary and non-physical forms which escalate an organization's competitiveness and innovativeness.

Most studies group intellectual capital into three main parts namely human capital, structural capital, and relational capital (Bontis, Keow, & Richardson, 2000; Wang, Wang, & Liang, 2014). Human capital is understood as knowledge that lies in personal attributes, which comprises capabilities, knowledge, experiences, and willingness to learn from every member of an organization (Carson, Ranzijn, Winefield, & Marsden, 2004). Meanwhile, structural capital is knowledge embedded in organizational activities, procedures, and structures, encompassing the hardware, software, databases, documents, work processes, patents, and all other codified knowledge (Wang et al., 2014). Ultimately, relational capital is knowledge assets derived and acquired from an organization's external relationship (Subramaniam & Youndt, 2005). Thus, intellectual capital in this research is defined as all organization's knowledge assets that generate value and enhance performance, comprising human capital, structural capital, and relational capital.

### 2.2. Internal and External Collaboration

Collaboration is defined as joint activities which comprises cooperation, communication, and coordination among participants in achieving mutual objectives (Chiocchio, Grenier, O'Neill, Savaria, & Willms, 2012). It

may help embroiled parties in achieving theirs goals through several key activities namely, resources fusion, knowledge dissemination, and subtraction of activities duplication (Faems, Van Looy, & Debackere, 2005; Thompson & Ku, 2006).

This study emphasis on horizontally collaboration. Hence, limited research discusses the topic and link it with distribution performance (Ho et al., 2019). According to its scope horizontally, prior studies divide collaboration into two main types (Ho et al., 2019). The first is internal collaboration that occurs between two or more departments within the same organization, and the second is external collaboration that involves several independent entities in the context of achieving common goals (Stank et al., 2001; Sanders & Premus, 2005, Luzzini, Brandon-Jones, Brandon-Jones, & Spina, 2015; Ho et al., 2019). Regarding the research context, this study defines internal collaboration as a process of communication, coordination, and cooperation between two or more departments within the same local government, while external collaboration is a continuous process that comprises communication, coordination, and cooperation activities between local government's work units and other independent entities outside the scope of local government.

## 2.3. Distribution Performance

Prior research defines performance as a series of achievement of organizational goals (Tomal & Jones, 2015; Koohang, Paliszkiewicz, & Goluchowski, 2017), greatly determined by resources availability and managerial steps (Notanubun, 2021). Distribution performance is related to organizational achievement in delivering quality product or service to satisfy customers and gain profit (Chow, Heaver, & Henriksson, 1994). Thus, conceptually, distribution performance is an integral element of organizational performance (Chow et al., 1994). Nikol'chenko and Lebedeva (2017) stated that distribution performance is measured by two main aspects, like two sides of a coin. The first is internal dimension which refers to working process effectiveness, service lead time, and resource efficiency. Whereas the second is external dimension which is related to customers' and stakeholder's satisfaction. In this research, we define distribution performance as the result of public organization achievement in delivering public service to satisfy the recipients and relevant stakeholders through effective working process as well as efficient resources usage.

## 2.4. The Relationship among Intellectual Capital, Internal Collaboration, and External Collaboration

Previous research has highlighted that resources pooling

is the main way of involving entities to achieve common goals through collaboration (Faems et al., 2005; Osei-Kojo, Bawole, & Sakyi, 2020). Thus, the initial intellectual asset, which is the most important resource for any organization (Nonaka et al., 2000), determines the success of networking. Several previous studies have clarified and proved the positive influence of intellectual capital on both internal and external collaboration (Ataseven, Nair, & Ferguson, 2018; Shou et al., 2018; Saengon et al., 2019; Papaioannou et al., 2020; Al-Omoush, Palacios-Marqués, & Ulrich, 2022), which led the researchers to frame the first hypothesis:

**H1a**:  Intellectual capital has a positive effect on internal collaboration.
**H1b**:  Intellectual capital has a positive effect on external collaboration.

## 2.5. The Relationship among Internal Collaboration, External Collaboration, and Distribution Performance

Collaboration encourages the process of ideas, information, knowledge, and resources sharing from embroiled parties, leading to enhanced organization capability to deliver product and service. Furthermore, it assists in performance escalation by aligning and harmonizing each bound entity's work process (Paagman et al., 2015), which strengthens joint distribution activities. Prior studies have underlined the critical role of partnership in improving service delivery quality and expense efficiency in public sector (Achuora et al., 2013; Dupare, 2020). Duhamel, Carbone, and Moatti (2016) has emphasized that both internal and external collaboration synchronously enhance organization capability in predicting and solving potential risk in distribution practice. Some empirical evidence has confirmed the positive effect of internal collaboration; likewise, external collaboration on distribution performance (Stank et al., 2001; Sanders & Premus, 2005; Achuora et al., 2013; Nikol'chenko & Lebedeva, 2017). The researchers, therefore, propose the second hypothesis as follows:

**H2a:**  Internal Collaboration has a positive effect on distribution performance.
**H2b:**  External Collaboration has a positive effect on distribution performance.

## 2.6. The Relationship between Intellectual Capital and Distribution Performance

Intellectual capital is the decisive asset in today's era of competition which greatly determines the achievement of performance from any organization (Roos, 2005). Han and

Ding (2007) underline the critical role of overall integral part of intellectual capital on performance specially in distribution practice. Skills, creativity, ability, and knowledge of employees which are accumulated as human capital will determine their individual performance, and accumulatively contribute to organizational distribution practice (Van Hoek, Chatham, & Wilding, 2002; Karia, 2018). Appropriate structural capital serves as a guideline for individuals and supports the organization's work results achieved according to the expected standards. Eventually, the knowledge gained from the organization's relationship with stakeholders may help the organization work better in accordance with stakeholders' expectations leading to enhancement of customer satisfaction (Abd-Elrahman, El-Borsaly, Hafez, & Hassan, 2020). Several previous studies have proved that intellectual capital contributes to distribution performance enhancement (Van Hoek et al., 2002; Samad, 2013; Abd-Elrahman et al., 2020).

Even though, as expressed by Shou et al. (2018), intellectual capital may not be enough to gain superior distribution performance, it may need collaboration implementation first. Several prior studies also confirm the

mediating role of external collaboration related to the effect of intellectual capital on distribution performance (Shou et al., 2018; Saengon et al., 2019; Wang, Schoenherr, Zhao, & Zhang, 2019). As some prior studies also highlight the role of internal collaboration as a critical predictor of distribution performance (Stank et al., 2001; Paagman et al., 2015), the current study assumes that similar to external collaboration, it mediated the leverage of intellectual capital on distribution performance. Thus, the present study has proposed the third hypothesis as follows:

**H3a**:   Intellectual capital has a positive direct effect on distribution performance.
**H3b**:   Intellectual capital has a positive indirect effect on distribution performance through internal collaboration.
**H3c**   Intellectual capital has a positive indirect effect on distribution performance through external collaboration.

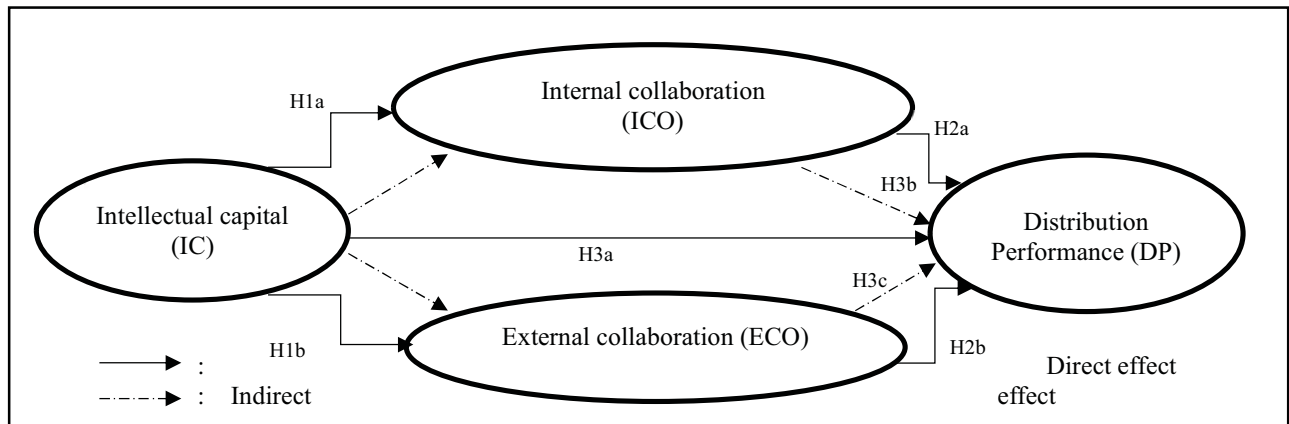Based on the hypothesis, a conceptual framework is developed, as illustrated in Figure 1.



**Figure 1**: Proposed Conceptual Framework

The conceptual model in Figure 1 allows both the direct effect of intellectual capital on distribution performance and indirectly through both Internal and External collaboration.

## 3. Research Methods and Materials

This research was performed in Indonesian local government, more specifically at regency/city work units in South Sulawesi Province. It is one of the biggest provinces in Indonesia with a large number of regencies/cities compared to other provinces. We choose regency/city level

regarding to their poor performance achievement especially in delivering quality public service, whereas in a decentralized government system as implemented in Indonesia nowadays, their role and responsibility are increasingly significant (Wardhani et al., 2017).

The study used quantitative method with survey techniques. Primary data collection employed a five-point Likert scale questionnaire which was disseminated manually. The population of this study included 1052 work units and this research set an error rate of 10%. Thus, it requires a minimum sample of 215 work units based on calculations using Issac and Michael formulas. The authors fulfilled the

required number of work units through the proportional random sampling technique based on the number of regencies/cities and work unit type.

This research involved leaders from each work unit as respondents randomly, considering that they have adequate work experience and relevant understanding about intellectual capital, collaboration quality, and distribution performance achievements comprehensively in which they work. Each work unit was represented by two respondents. One respondent was from top manager level, while the other one represented middle manager level. Thus, there were 430 respondents who filled out the questionnaire distributed across 24 regencies/cities in South Sulawesi Province. In the data analysis, the study employed Structural Equation Modelling (SEM) with AMOS program.

Pair dimensions and five indicators were used to measure internal collaboration as developed by Sanders and Premus (2005), Shou et al. (2018) as well as Mac McCullough, Eisen-Cohen, and Lott (2020). Meanwhile, to measure external collaboration, this study applied two dimensions and five indicators in accordance with the instruments developed by Takeishi (2001), Gulati, Wohlgezogen, and Zhelyazkov (2012), as well as Shou et al. (2018). Furthermore, to measure intellectual capital, this study used three dimensions and twelve indicators adopted from Ramírez's (2010), Wang's et al. (2014), as well as Kianto, Sáenz, and Aramburu's (2017) study. Distribution performance is grouped into two dimensions and eight indicators adopting Kim's (2008), Achuora's et al. (2013), as well as Nikol'chenko and Lebedeva's (2017) research. The dimensions and indicators for each variable are presented in table 1.

**Table 1**: Variables, Dimensions, and Research Indicators

| Variable | Dimensions | Indicators |
|---|---|---|
| Intellectual capital | Human capital | Skill |
| | | Leadership |
| | | Knowledge |
| | | Creativity |
| | Structural capital | Operational Procedure |
| | | Facility |
| | | Document and databases |
| | | Norms and structure |
| | Relational capital | Relationship with stakeholders |
| | | Learning ability |
| | | Knowledge from relationship |
| Internal collaboration | Internal process | Communication between department |
| | | Coordination among work units |
| | | Internal cooperation |
| | Internal Shared vision | Strategic alignment |
| | | Joint engagement |
| External collaboration | External process | External communication |
| | | External coordination |
| | | External cooperation |
| | External Shared vision | Stakeholders' involvement |
| | | Similarity of values |
| Distribution performance | Internal performance | Resources efficiency in delivering service |
| | | Average service lead time |
| | | Variety in service access |
| | | Dissemination of information related to service |
| | External performance | Quality of public services |
| | | Number of complaints |
| | | Service recipient satisfaction |
| | | Responsiveness |

The research applied two stages of confirmatory factor analysis to verify both validity and reliability of each instrument. The initial stage is first-order factor analysis that aimed to test validity and reliability of each dimension, while the next stage is second-order factor analysis which aimed to test validity and reliability of each latent variable. Variance Extracted (VE) and Construct Reliability (CR) values were used as indicators in both steps to determine the validity and reliability of each instrument. Based on the results of both first and second order factor analyses, overall CR values and VE values of each dimension as well as each latent variable exceeded the threshold value or at least 0.5 and 0.7, respectively (Hair, Black, Babin, & Anderson, 2009).

## 4. Results

### 4.1. Respondent Description

Most of the respondent were over 41 years and had appropriate working experience. Most of them had been working for 16 years. About 57.4% respondent have an undergraduate education or higher, and mostly were male with a percentage of 58.6%.

### 4.2. Direct Effect Testing Results

Hypotheses testing results as seen in Table 2 confirm that intellectual capital has a significant and positive effect on both internal collaboration ($\beta = 0.383$, t = 18.876***) and external collaboration ($\beta = 0.284$, t = 18.746***). Thus, both H1a and H1b were proven, indicating that intellectual capital contributes to collaboration that occurs internally between several departments and externally between several organizations. Furthermore, this research also confirms that internal collaboration positively affects distribution

performance ($\beta$=0.486, t=8.532***), but on the other hand, this study found that external collaboration did not affect the improvement of distribution performance; hence the t statistic value was not significant ($\beta$=0.116, t=1.524). Thus, the H2a was confirmed, while H2b was rejected.

Eventually, the finding supports H3a, which proposes the positive effect of intellectual capital on distribution performance. The effect of intellectual capital on performance is direct and statistically significant ($\beta$ = 0.428, t = 12.936***).

**Table 2**: Direct Effect Testing Results

| Hypotheses | Regression weights | S. E | t statistics | P |
|---|---|---|---|---|
| H1a: IC ⟶ ICO | .383 | .020 | 18.876 | *** |
| H1b: IC ⟶ EO | .284 | .015 | 18.746 | *** |
| H2a: ICO ⟶ DP | .486 | .057 | 8.532 | *** |
| H2b: ECO ⟶ DP | .116 | .076 | 1.524 | .128 |
| H3a: IC ⟶ DP | .428 | .033 | 12.936 | *** |
| R² ICO | **0.455** | | | |
| R² ECO | **0.451** | | | |
| R² DP | **0.686** | | | |

Notes: ***Significant at 1%. **Significant at 5%. *Significant at 10%.

## 4.3. Indirect Effect Testing Results

To examine the indirect effect of intercourse variable, this research utilizes two types of tests. The first is Sobel test and the second is VAF Calculation according to Hair et al.'s (2009) condition. Based on the result provided in Table 3, this research confirms that internal collaboration mediates the influence of intellectual capital on distribution performance (Sobel value = 7.789***), while external collaboration does not (Sobel value = 1.521, p = 0.128). In line with Sobel test result in the VAF values calculation, internal collaboration mediates the effect of intellectual capital on performance; hence, the VAF is value bigger than 20%. External collaboration does not serve as intercourse; hence, the VAF value is lower than 20%. In short, H3b is accepted while H3c is rejected.

Participants involved in external collaboration may vary, and each has its own characteristics and goals. This generates the complicity of power-sharing and potentially hinders openness and knowledge dissemination between the involved parties, which is highlighted as a major barrier in external public collaboration (Osei-kojo et al., 2020; Shaw, 2003). Moreover, these trims led to difficulty in aligning each participant's expected outcomes, which is the major obstacle in this activity (Osei-kojo et al., 2020). The differences in internal collaboration are less prominent. Several work units involved in internal collaboration have similar goals and are tied on general objectives of local government. Furthermore, they have similar characteristics;

thus, implementation of external collaboration is more difficult than to the other one, which affects its contribution to distribution performance as well as its role as the mediator.

**Table 3**: Indirect Effect Testing Result

| Hypotheses | Sobel test value | P | Indirect effect | VAF values |
|---|---|---|---|---|
| H3b: IC ⟶ DP through ICO | 7.789 | *** | 0.241 | 30,7% |
| H3c: IC ⟶ DP through ECO | 1.521 | 0.128 | 0,121 | 15,4% |

Notes: ***Significant at 1%. **Significant at 5%. *Significant at 10%.

## 5. Discussions and Implications

The findings confirm the significant leverage of intellectual capital on distribution performance directly, likewise on both internal collaboration and external collaboration. Furthermore, this research obtains distinct results regarding the direct effect of internal collaboration and external collaboration on distribution performance, similarly the intercourse role of both. Internal collaboration serves as a predictor of distribution performance and at the same time act as the intercourse from the leverage of intellectual capital on distribution performance, whereas the external one neither affect distribution performance directly nor bridge the relationship.

*Theoretically*, this result strengthens the lean stream by providing empirical evidence that simultaneously confirms the positive effect of intellectual capital on both internal and external collaboration. This study complements the previous research, which only discusses the predictor's effect on external collaboration (Shou et al., 2018; Saengon at al., 2019; Papaioannou et al., 2020). Furthermore, the study supports prior studies confirming the importance of intellectual capital as a driver of distribution performance enhancement (Van Hoek et al., 2002; Samad, 2013; Abd-Elrahman et al., 2020); this result enriches the narrow study that emphasized on the leverage of intellectual capital on distribution performance as expressed by Wudhikarn et al. (2018).

In addition, the research also strengthens previous studies which verify the positive effect of internal collaboration on distribution performance (Stank et al., 2001; Sanders & Premus, 2005). Paagman et al. (2015) stated that internal collaboration may assist organization in aligning work direction and reducing unnecessary duplication activities which contribute to performance enhancement, mainly in complex organizations that consist of numerous divisions. Moreover, this study provides a contrarily result with the other studies that confirmed the contribution of external collaboration to performance escalation in distribution practice (Sanders & Premus, 2005; Achuora et

al., 2013; Nikol'chenko & Lebedeva, 2017). Instead, it supports other previous studies which reported that external collaboration failed (Doz, 1996; Teece, 2000; Ostrander & Chapin-Hogue, 2011; Choi & Hwang, 2015). In a wider view, the finding enriches limited literature which focuses on effect of horizontal collaboration namely internal and external collaboration on distribution performance as highlighted by Ho et al. (2019). Eventually, the current research enriches narrow study by verifying the mediator role of internal collaboration pertaining with the context of intellectual capital and distribution performance relationship; nevertheless, on the other hand it does not support previous studies which has confirmed the critical role of external collaboration as the intercourse of the relationship (Shou et al., 2018; Saengon at al., 2019).

*Practically*, managers and policy makers in public sector should optimize the effort to enrich intellectual assets which led on increasing quality of internal and external collaboration, as well as organizational capability in delivering quality service. To gain extra impact on distribution performance, public managers and practitioners may direct intellectual capital asset to support internal collaboration first, leading to performance escalation. Internal collaboration has a critical role as an intercourse, mainly in complex organizations which have several departments closely related and interdependence on each other in jointly delivering services activities. It guides utilization of intellectual asset and other organizational resources to be more optimal, organized and coordinated which leads to organizational capability enhancement in satisfying customers as well as streamline work processes which are two main integral aspects of distribution performance.

Lastly, nevertheless the finding confirms the insignificant effect of external collaboration on distribution performance. This study remains consider it a critical aspect as expressed by Stank et al. (2001) in distribution practice. It enables organizations to collect relevant resources from numerous participants which may contribute to distribution performance mainly in supporting various service access, strengthening service responsiveness and information dissemination, reducing average service lead time, and enhancing quality of public service. However, it must be managed appropriately and carefully to ensure its contribution to organizational goals. In this matter, the authors emphasize on several important points to optimize. First, we highlight the importance of the preparing phase. In these initial conditions, the distribution of tasks and responsibilities must be clear, including any risks that may arise during implementation. Second, we underline the importance of every party's expected outcome mapping and activities aligning. Last but not least, openness and mutual trust must be encouraged through togetherness and continuous dialogues. It supports the dissemination of knowledge, coordination, joint learning, and certain resource pooling that become the strength of external collaboration (Doz, 1996; Ostrander & Chapin-Hogue, 2011).

## 6. Conclusions

Not only do internal and external collaboration serve as an antecedent of intellectual capital, which previous studies have confirmed, they also act as an outcome of intellectual capital. This means the link between both internal and external collaboration and intellectual capital is a two-way relationship. Thus, this study recommends that policymakers and practitioners in the public sector should not restrict how to improve intellectual capital through internal and external collaboration process solely, but also how to enrich it in the hope that the internal and external collaboration process that follows will be better.

This research confirms the different effect of internal collaboration and external collaboration on distribution performance, likewise the difference intercourse roles of both internal collaboration and external collaboration regarding the effect of intellectual capital on distribution performance. The finding can be used as a consideration for managers and policy makers in public organizations to set the appropriate way to enhance distribution performance.

As this study discusses the topic in public sector only, the used model in this study can be replicated, developed, or perhaps retested in different sectors to strengthen generalization or deliver meaning divergence. Eventually, because the current research used quantitative approach, it is interesting to conduct a qualitative study or mixed method research aimed to explore the process of how intellectual capital contributes to distribution performance enhancement, whether through external or internal collaboration.

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# Appendixes

**Appendix 1**: Validity and Reliability Test Results

| Validity and reliability of first-order factors test results | | | | |
|---|---|---|---|---|
| **Dimensions** | **Indicators** | **Loading factors** | **CR Values** | **VE Values** |
| Human capital | 4 | 0,784-0,807 | 0,83 | 0,63 |
| Structural capital | 4 | 0,728-0,880 | 0,87 | 0,62 |
| Relational capital | 3 | 0,728-0,880 | 0,87 | 0,62 |
| Internal process | 3 | 0,636-0,790 | 0,84 | 0,52 |
| Internal shared vision | 2 | 0,647-0,844 | 0,86 | 0,56 |
| External process | 3 | 0,647-0,844 | 0,86 | 0,56 |
| External shared vision | 2 | 0,647-0,844 | 0,86 | 0,56 |
| Internal performance | 4 | 0,667-0,775 | 0,81 | 0,51 |
| External performance | 4 | 0,725-0,784 | 0,85 | 0,59 |
| Validity and reliability of second-order factors test results | | | | |
| **Variables** | **Dimensions** | **Loading factors** | **CR Values** | **VE Values** |
| Intellectual capital | 3 | 0,873-0,882 | 0,87 | 0,77 |
| Internal collaboration | 2 | 0,873-0,882 | 0,87 | 0,77 |
| External collaboration | 2 | 0,839-0,959 | 0,90 | 0,81 |
| Distribution performance | 2 | 0,932-0,984 | 0,96 | 0,92 |
| Intellectual capital | 3 | 0,873-0,882 | 0,87 | 0,77 |
| Internal collaboration | 2 | 0,873-0,882 | 0,87 | 0,77 |