

# Creating Dynamic Learning Capability in Learning Framework through Strategic Alliance

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**Background and Purpose:** The changing ecosystem demands improvement in a company's capabilities through its learning framework and respective dimensions. Using empirical testing, the purpose of this research is to gain a better understanding of the creation of dynamic learning capability through strategic alliances in the learning framework.

**Methodology:** The data were collected via an online survey of 78 strategic alliances of a public institution. The structural equation model (SEM) was used to test the proposed model.

**Finding:** Dynamic learning capability positively and significantly affects strategic alliance performance in a learning framework that comprises relationship capital, surfacing, joint learning structure, and knowledge acquisition dimensions.

**Conclusion:** This research finds that all constructs in the learning framework (relationship capital, surfacing, joint learning structure, and knowledge acquisition) create dynamic learning capability, which has a significant effect on strategic alliance performance. Each construct within the learning framework (relationship capital, surfacing, joint learning structure, and knowledge acquisition) was empirically tested and can create the dynamic learning capability that contributes to the strategic alliance's performance, notably within the business learning domain.

**Keywords:** *Strategic alliances, Learning framework, Dynamic learning capabilities, Strategic alliance performance*

## 1 Introduction

One of the 10 most significant shifts facing organisations today is closing the capability chasm (McKinsey, 2023). In a survey of more than 2,500 business leaders around the world, only 5% of the respondents stated that their organisations had the capabilities they needed (McKinsey, 2023). Related to Ahmad, Omar, and Quoquab (2019), a company's sustainability depends on its corporate sustainable longevity, which in turn relates to the company's resources: financial strength, vision and strategy, customer orientation, internal capabilities, and learning

and growth. This condition indicates that most companies have some level of need to fulfil their company's capability to sustain the competitiveness of their business. According to Haapane, Hurmelinna-Laukkanen, and Puumalainen (2020), dynamic capability is an organisation's capacity to create, extend, or modify its resource base, directing managers with dynamic managerial capabilities. Dynamic capabilities are recognised as specialisation and rapid competitive responses through the maintenance of asset alignment capabilities. In this way, collaborating firms can combine assets to create and deliver value to customers, which can be regarded as action by the company to adapt

its process or acquire knowledge (Furnival, Boaden, & Walshe, 2019).

Gonzales-Perez and Ramirez-Montoya (2022) stated that three types of competencies are required in the modern-day workplace: learning skills, literacy skills, and life skills. Learning skills consist of creativity and innovation, critical thinking, problem-solving, communication, and collaboration. Pereira and Romero (2017) found that skill development is an essential key factor in adopting and implementing the Industry 4.0 framework. However, Industry 4.0 is often misinterpreted and focuses only on the technology perspective while in reality, companies must also change their organisational structures and cultures (Schuh, Dumitrescu, Kruger, & ten Hompel, 2020). This demonstrates that technology relates to technical capability and the variables impacted within its ecosystem. Therefore, Industry 4.0 will create automation tasks that will require professional employees to have the relevant capability to derive the maximum benefits from the new technology trends and business opportunities, including the need for suitable learning methods. Education 4.0 also differs from traditional education as it relies on digital strategies, digital security, and proper infrastructure (Gonzales-Perez & Ramirez-Montoya, 2022). Industry 5.0 focuses on concepts of sustainability, bioeconomy, and a collaborative environment of technology and human beings that can create a resilient industry and incorporate human social values (Frederico, 2021; Sindhvani et al., 2022). In Industry 5.0 (education and training research themes), universities must incorporate transdisciplinary education, cognitive skills, and social and environmental aspects, supported by digital technologies (Borchardt et al., 2022). Universities must therefore also have multi-education supported by digital technologies to support lifelong learning for employees.

Learning can be interpreted as a process of repetition and experimentation that improves task execution and enables the quicker identification and obtaining of new product opportunities from the organisational internal and external environment (Rashidirad & Salimian, 2020). Internal learning includes multifunctional employee training, knowledge database maintenance, and knowledge sharing, while external learning occurs mainly through relationships with customers and suppliers and international joint ventures that can modify the business direction (Rashidirad & Salimian, 2020). The internal or external learning environment can be represented as the learning framework, which in turn comprises four elements: relationship capital, surfacing, joint learning structures, and knowledge acquisition (Morrison & Mezentseff, 1997). Relationship capital concerns unique relationships on a personal or company level built by mutual trust, respect, and friendliness as well as closely interactive relationships characterised by mutual respect and trust between parties (Paul, Robert, Benn, & Kenneth, 2006). Surfacing con-

cerns how people learn to surface, challenge, and adapt mental models related to assumptions, images, and generalisations to understand the world and the actions they will take (Morrison & Mezentseff, 1997). A joint learning structure is a structure for sharing knowledge between the company and its strategic partner (Galeazzo, Furlan, & Vinelli, 2016). The final element is knowledge acquisition, in which external knowledge acquisition is incorporated into a direct market exchange and cooperation agreement or strategic alliance (Ortiz, Donate, & Guadamillas, 2018).

In the context of learning, collaborative learning is the process of sharing knowledge, information, and resources in supply chains (Rupčić, 2020). Cooperation agreements or strategic alliances are the methods used to acquire complex and specialised knowledge, frequently requiring learning development (Savino, Messeni Petruzzelli, & Albino, 2017). In other words, a company's capability can be developed with internal resources through their learning process and by external collaboration, such as strategic alliances, to obtain new and relevant knowledge. Many previous studies have discussed the definition of strategic alliances. Yoshino and Rangan (1995) explained that strategic alliances involve at least two partner firms and once the alliance is formed, it may constitute a separate legal entity. Types of alliances include joint ventures, joint research development, hierarchical relations, cooperatives, equity investments, subcontractor networks, consortia, strategic cooperative agreements, cartels, action sets, franchising, licensing, industry standards groups, and market relations. The cooperative agreements can help companies improve their learning frameworks efficiently (both financial and non-financial). Strategic alliances also include university partnerships, joint ventures (equity partnerships), and non-equity partnerships (Fey & Birkinshaw, 2005). In summary, strategic alliances in the learning environment can make continuing contributions to the performance of assigned tasks and can create dynamic capability.

All companies must improve their performance and innovate to remain competitive and sustainable (Hijal-Moghrabi, Sabharwal, & Ramanathan, 2020). This applies equally to public institutions. The public sector's competitive advantage lies in improving public services and eliminating inefficiencies and waste. Concerning innovation, it should also focus on increasing value for the public through widespread improvements in service performance and governance (Popa, Dobrin, Popescu, & Draghici, 2011). The public sector's innovation capacity thus lies in its ability to improve services that enhance the value of public institutions and differentiate them from others by adapting to social changes and the needs of citizens and stakeholders (Popa et al., 2011). Nevertheless, the adoption of technology to create a digital government poses certain challenges (Chen & Hsieh, 2014). These relate to three significant domain aspects: technology or technical, institution or organisation, and people. Regard-

ing the people aspect, the challenges are the culture of society, the digital divide, legal issues, the economy of society, human resources, public officials and citizens being slow to adapt, a lack of skill and expertise, leadership, and reliability (Arief, Wahab, & Muhammad, 2021). To summarise, the challenge in digital government concerns the need for technology-savvy talent created through development and human capital transformation. Furthermore, companies must consider reactions within the organisation, such as the organisational readiness for change and employee performance, including counterproductive work behaviour (Chrisanty, Gunawan, Wijayanti, & Soetjipto, 2021). Previous research has indicated that each construct in the learning framework can create dynamic capability. However, there has not been a complete learning framework comprising all the learning constructs (relationship capital, surfacing, joint learning structure, and knowledge acquisition) in the context of creating dynamic learning capability, especially in a learning area. This study therefore empirically examines the effect of a complete learning framework on dynamic learning capability and strategic alliance performances.

This study was conducted in public institutions in Indonesia. Public institutions must maintain their competitive advantage by protecting their good reputation, innovation capability, and efficiency. Many have already developed dynamic capabilities through domestic and international strategic alliances and implemented various learning and research area programmes as part of their strategic alliances with diverse organisations. However, the current priority is the on-point target accomplishment of the strategic alliance programme. Accordingly, this research attempts to answer a research question: How does dynamic learning capability affect the strategic alliance performance in a complete learning framework (relationship capital, surfacing, joint learning structure, knowledge acquisition)?

The study is divided into five sections. The first section presents the conceptual framework. The methodology is then described in the second section. The empirical results are explained in the third section. The fourth section discusses the research results. Finally, the research is concluded in the fifth section, alongside some managerial recommendations, limitations of the study, and potential future research avenues.

## 2 Dynamic Learning Capability in a Learning Framework

Relationship capital concerns the unique relationships on a personal or company level that are built on mutual trust, respect, and friendliness in addition to closely interactive relationships featuring mutual respect and trust between parties (Paul et al., 2006). The process of learning between alliances can indirectly influence alliance

performance through trust and relationship commitment (Shan, Dan, & Qiu, 2018). The relationship benefits involve reducing transaction and supervision costs through information and risk-sharing (Shan et al., 2018) and acquiring unique knowledge (Lenart-Gansiniec, 2016). The formal and informal socialisation mechanism impacts relational capital in a way that increases the supplier relationship outcomes (Cousin, Handfield, Lawson, & Petersen, 2006). Building a learning relationship concerns the management's ability to create a learning vision that can then be shared throughout the relationships. This ability derives from the formation of a new management style in which coordination is prioritised over a hierarchical approach. Previous research identified that commitment, coordination, trust, and interaction frequency have a significant impact on inter-organisational relationship performance (Nguyen, Mai, & Nguyen, 2021). The leader of a company acts as a coordinator (Osterberg, 1993). A strong management style within learning alliances is important as it extends across the relationship (Morrison & Mezentseff, 1997). This indicates that learning relationship capital depends on the management coordination role via the relationship with strategic alliances. Therefore, while relationship capital has an impact on dynamic learning capability and strategic alliance performance, it has never been empirically tested in conjunction with other constructs in the learning framework, namely surfacing, joint learning structure, and knowledge acquisition, especially in the learning area. Correspondingly, we propose that:

*H1: Relationship capital is positively related to dynamic learning capability.*

The most significant learning in an organisation involves changing mental models (Senge, 1992). Surfacing, meanwhile, relates to how people learn to surface, challenge, and adapt the mental models related to assumptions, images, and generalisations in order to understand the world and the actions they will take (Morrison & Mezentseff, 1997). Yue, Hua, and Quan (2018) defined the learning process of an alliance as the acquiring, encoding, sharing, and internalising of proprietary technology or information related to the alliance and alliance management. The translation of alliance managerial information or proprietary technology from individuals into implicit or explicit information refers to information acquisition (Yue, Hua, & Quan, 2018). Information acquisition will assist the company in retaining its knowledge and sharing it with the next manager. Information encoding refers to the creation and use of information objects or resources, such as alliance criteria, lists, or manuals, to take action or decisions regarding a future alliance (Yue et al., 2018). Meanwhile, the organisation's process of exchanging and sharing alliance management knowledge with individuals in related interior departments within the enterprise refers to information sharing (Yue et al., 2018). Thus, the sharing forum becomes a place where knowledge is accessible

and can be exchanged and disseminated through dialogue between a company and its strategic partner. Information internalisation refers to the organisation's process of expediting alliance proprietary technology owned by the organisation to become individual information (Yue et al., 2018). Therefore, surfacing has an impact on dynamic learning capability and strategic alliance performance. However, it has never been empirically tested alongside the other constructs in the learning framework, namely relationship capital, joint learning structure, and knowledge acquisition, particularly in the field of learning. Correspondingly, we propose that:

*H2: Surfacing is positively related to dynamic learning capability.*

A joint learning structure is an arrangement for sharing knowledge between the company and its strategic partner. Based on Galeazzo, Furlan, and Vinelli (2016), organisational learning infrastructure has three dimensions: strategic alignment, teamwork for problem-solving, and the goals management system. Strategic alignment, as the first dimension, improves the products and processes by enhancing the company's ability. It involves exploiting and synergising the company's competencies, technology, and innovation and continuously stimulating the new knowledge available to functions and cross-learning. As such, strategic alignment aims to create synergies between the company and its strategic partner by exploiting both resources and new knowledge. The second dimension is teamwork for problem-solving. This relates to employees working in teams to solve problems since they have a mutual understanding and a common language, and improve the organisational climate (Galeazzo et al., 2016). Teamwork will create the same objective and goal and make it easier for a company and its strategic partner to solve problems through collaboration. The third dimension is the goals management system. This relates to how the company shapes decisions and actions through rewards and incentives to achieve the organisation's goals (Galeazzo et al., 2016). The company must create a system that will result in the realisation of its goals by influencing the decisions and actions of its employees. Therefore, the joint learning structure has an impact on dynamic learning capability and strategic alliance performance but has never been empirically tested alongside the other constructs in the learning framework: relationship capital, surfacing, and knowledge acquisition, notably within the learning domain. Consequently, we propose that:

*H3: Joint learning structure is positively related to dynamic learning capability.*

Ortiz, Donate, and Guadamillas (2018) grouped external knowledge acquisition into direct market exchange and cooperation agreements or strategic alliances. These groups were developed in line with the characteristics and goals of knowledge acquisition. The quickest acquisition method is direct market exchange (contracting) through

external R&D and direct acquisition. Examples of direct acquisition include licensing and consulting, recruitment of staff with specific knowledge, and company acquisition (Davenport & Prusak, 1998). Cooperation agreements or strategic alliances are methods for the acquisition of complex and specialised knowledge, frequently requiring learning development (Savino et al., 2017). Specific examples of strategic alliances include university partnerships, joint ventures (equity partnerships), non-equity partnerships (Fey & Birkinshaw, 2005), and cooperation agreements with competitors, customers, and suppliers (Arvanitis, Lokshin, Mohnen, & Wo"rter, 2015). As such, knowledge acquisition has an impact on dynamic learning capability and strategic alliance performance, although it has never been empirically tested in connection with the other constructs in the learning framework, namely relationship capital, surfacing, and joint learning structures, particularly in the field of learning. As a result, we propose that:

*H4: Knowledge acquisition is positively related to dynamic learning capability.*

### 3 Dynamic Learning Capability Creating Strategic Alliance Performance

Dynamic learning capability concerns a company's ability to address opportunities by proposing new products or services (Matysiak, Rugman, & Bausch, 2018). Learning is interpreted as a process of repetition and experimentation that improves tasks and enables the quicker identification and obtaining of new product opportunities from the organisational internal (Teece, Pisano, & Shuen, 1997) and external environments (Lin & Wu, 2014). Internal learning includes multifunctional employee training, knowledge database maintenance, and knowledge sharing, while external learning is mainly conducted through relationships with customers, suppliers, and international joint ventures (Lin & Wu, 2014) that can modify the business direction (Lavie, 2006). A company becomes more competent in assimilating external knowledge in similar fields due to positive feedback between experience and learning (Zhou & Wu, 2010). The learning capability has a positive effect on the company's ability to create value (Rashidirad & Salimian, 2020). While all of the above-cited literature has included empirical studies on dynamic learning capability and strategic alliance performance alone, these have never been empirically tested alongside the other constructs in the learning framework, especially in the field of learning. As such, and to answer the research question "Does dynamic learning capability correlate to strategic alliance performance?", the following hypothesis is proposed:

*H5: Dynamic learning capability is positively related to strategic alliance performance.*

It is necessary to measure the performance of the strategic alliance as the company will need to evaluate the programme and improve the critical areas. Alliance performance can be measured using two methods. First, the objective method by analysing secondary data on the focal company over a period (Glaister & Buckley, 1998) and second, the subjective method, by asking the alliance manager or person directly involved in handling the day-to-day alliance matters (Dhaundiyal & Coughlan, 2020).

## 4 Method

### 4.1 Measures

Variable measurements were adapted from the literature on the respective variables. The measure for strategic alliance performance was adapted from Dhaundiyal and Coughlan (2020). The measure for dynamic learning capability was adapted from Rashidirad and Salimian (2020). The relationship capital measure was adapted from Nguyen, Mai, and Nguyen (2021), while that for surfacing was adapted from Yue et al. (2018). The measure for joint learning structure was adapted from Galeazzo et al. (2016), and the measure for knowledge acquisition was adapted from Ortiz et al. (2018). The response for each item was measured using a seven-point Likert scale ranging from (1) “strongly disagree” to (7) “strongly agree”. The questions were tailored to fit the research area, which is the public institution, and tested via a wording test by

three representative respondents and customised based on their inputs. After the customisation, the questions were tested via a pre-test with 35 respondents whose profiles matched that of the target unit analysis. The pre-test results confirmed the reliability and validity of the questions. No further changes were made to the questions after the pre-test was conducted; therefore, the final version, as presented in the appendix, was distributed to all respondents. Table 1 shows the constructs employed in this study.

### 4.2 Sample and Data Collection

Data were collected via an online survey of a total of 127 strategic alliances (90 domestic and 37 foreign) with 304 respondents. All of the respondents were individuals in charge of the strategic alliances list in a public institution that had active alliance activities and agreements (at least one joint strategic alliance activity). We followed up the online survey with email reminders to the respondents. From the total population of 127 strategic alliances, we received responses from 86, although 8 of these alliances were categorised as outliers (more than 10% incomplete data). As such, 78 strategic alliances were counted for this research, giving an effective response rate of 67%. Table 2 contains the respondent profile. The majority of the respondents were from organisations that had been established for more than 20 years, public institutions, which had already collaborated with an alliance institution more than three years ago, and had a term agreement of longer than five years.

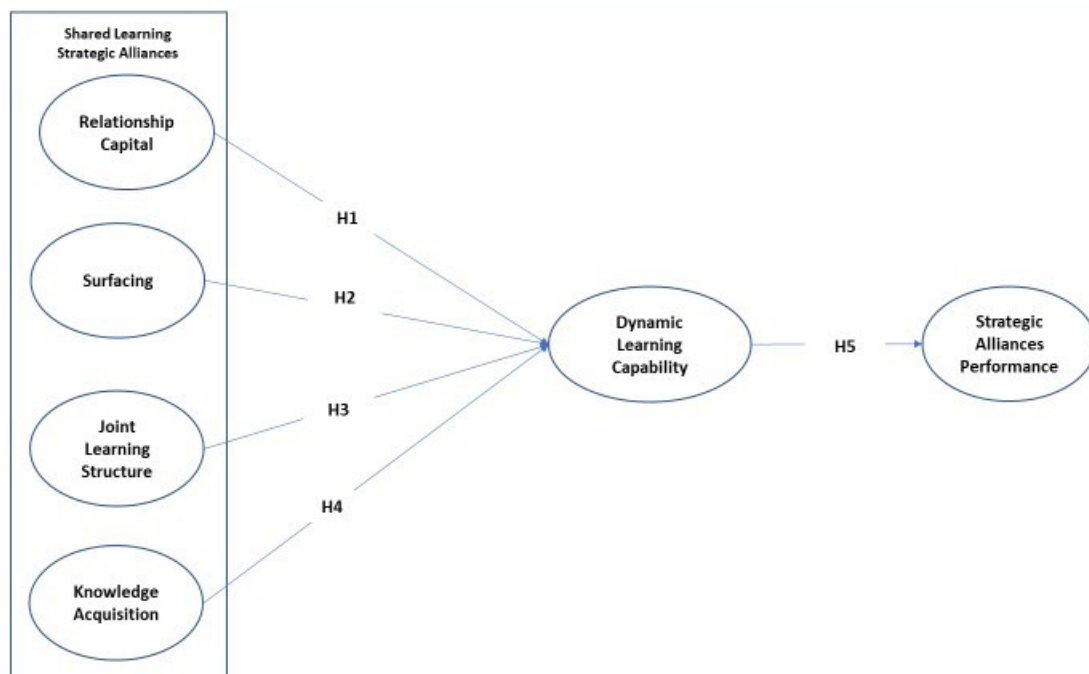


Figure 1: Research Model

Table 1: Research Constructs and Dimensions

No	Constructs	Dimensions
1.	Strategic Alliance Performance (SAP)	
2.	Dynamic Learning Capability (DLC)	
3.	Relationship Capital (RC)	Trust (T)
		Commitment (I)
4.	Surfacing (S)	Information Acquisition (SIA)
		Information Encoding (SIE)
		Information Sharing (SIS)
		Information Internalisation (SII)
5.	Joint Learning Structure (JLS)	Strategic Alignment (JLSSA)
		Teamwork for Problem Solving (JLSTS)
		Goals Management Systems (JLSGS)
6.	Knowledge Acquisition (KA)	Direct Exchange Acquisition (KAD)
		Alliances (KAA).

## 5 Analyses and Results

The data were analysed using measurement model and structural model analysis. The steps are elaborated in detail below.

### 5.1 Measurement Model Analysis

The first step in assessing measurement model validity is to examine the size and significance of the loadings, reliability, and convergent and discriminant validity. All of the latent variables or constructs met the existing reliability and validity threshold. All latent variables showed reliability as indicated by a Cronbach's alpha value  $\geq 0.50$ . This value represents "satisfactory to good" when interpreting internal consistency reliability since this study involves social science research (Hair, Black, Babin, & Anderson, 2019).

All of the constructs were valid and reliable as all of the Cronbach's alpha, reliability, and Average Variance Extracted (AVE) values were above their respective thresholds (Cronbach's alpha:  $\geq 0.50$ ; Reliability:  $\geq 0.70$ ; AVE  $\geq 0.50$ ). As such, each construct explained more than 50% of the variance of its indicators. Only one dimension under the knowledge acquisition construct had a validity

value below the threshold, namely direct exchange acquisition (Cronbach's alpha: 0.597; AVE: 0.420), although its reliability value (0.750) above the threshold ( $\geq 0.5$ ) meant it could still be included.

After calculating the PLS algorithm from the initial 59 indicators, the outer loading results showed that most indicators were above the threshold ( $\geq 0.708$ ; Hair et al., 2019), except for four: SAP5 (0.073), DLC6 (0.064), JLSA9 (-0.023), and KAD4 (0.039). Those four indicators were far below the threshold as a result of the reverse questions. Some of the respondents were unaware of these and submitted answers mistakenly. Reliable and valid results were subsequently obtained after deleting those four indicators and recalculating the PLS algorithm for the remaining 55 indicators. All of the latent variables or constructs thus met the reliability and validity threshold. Meanwhile, all variables showed reliability based on their threshold Cronbach's alpha value  $\geq 0.7$  while all outer loading values were already above the threshold  $\geq 0.5$  (Hair et al., 2019).

The next step was to assess the discriminant validity to determine how uniquely the indicators of a construct represented that construct versus the extent to which it was correlated with all other constructs in the model (Hair et al., 2019). The AVEs of two constructs were compared directly to the shared variance between the two constructs,

with a guidance threshold value  $>0.7$  (Hair et al., 2019). Based on the Fornell–Larcker criterion, five indicators were deleted to meet the requirements – JLST1, JLST2, JLST3, JLSSA2 and KAD1 – to give a total of nine deleted indicators. After deleting those five indicators, each construct had a value above the other constructs. For example, strategic alliance performance had the highest value (Fornell–Larcker: 0.851) for its correlation with strategic alliance performance compared to the correlation value with other constructs. Based on the cross-loadings in the discriminant validity assessment, each indicator in the construct represents the highest value compared to the correlation value with other constructs. For example, strategic alliance performance (cross-loading) had the highest value on indicators SAP1 (0.875), SAP2 (0.891), SAP3 (0.793), SAP4 (0.924), and SAP6 (0.760) for its correlation with strategic alliance performance compared to the correlation values with other constructs (dynamic learning capabili-

ty, relationship capital, surfacing, joint learning structure, and knowledge acquisition). The heterotrait–monotrait ratio (HTMT) criterion in discriminant validity assessment is defined as the mean value of the indicator correlations across constructs relative to the mean of the average correlations of indicators measuring the same construct (Hair et al., 2019). Henseler et al., in Hair, Black, Babin, and Anderson (2019), recommended a value of  $\leq 0.90$ . After using the bootstrapping procedure with a basic setting of 500 subsamples, most of the indicators were found to be below the HTMT ratio threshold ( $\leq 0.9$ ), except for knowledge acquisition (0.907). However, the knowledge acquisition indicators were already below the threshold (0.767) in the previous Fornell–Larcker discriminant validity assessment; as such, all of the latent constructs explained more of the variance in their item measures than they shared with another construct.

Table 2: Respondent Profile

Profile	Number	Percentage
1. Establishment		
> 20 years	63	80.77
6–20 years	13	16.67
< 5 years	0	0
Not Available	2	2.56
2. Type of Ownership		
Public Institution	42	53.85
Private Organisation	26	33.33
Other	8	10.26
Not Available	2	2.56
3. Collaboration Timeframe		
From year to now (2021–2022)	19	24.36
3 years ago (2018–2020)	14	17.95
> 3 years ago (before 2018)	43	55.13
Not Available	2	2.56
4. Term of Agreement Period		
> 5 years	38	48.72
2–5 years	25	32.05
< 2 years	13	16.67
Not Available	2	2.56
Total	78	

Table 3: Discriminant Validity: Heterotrait–Monotrait Ratio (HTMT)

No	Variables	Strategic Alliance Performance	Dynamic Learning Capability	Relationship Capital	Surfacing	Joint Learning Structure	Knowledge Acquisition
1.	Strategic Alliance Performance	1					
2.	Dynamic Learning Capability	0.808					
3.	Relationship Capital	0.726	0.783				
4.	Surfacing	0.867	0.876	0.766			
5.	Joint Learning Structure	0.809	0.809	0.609	0.838		

Table 4: Structural Model Analysis

Assessment	Threshold	Value
<b>1. Collinearity – Variance Inflation Factor (VIF)</b>	A value above 3 is likely to indicate a problem; high collinearity is defined as a value above 5.	Most of the indicators < 3, except for Surfacing (3.339) and Knowledge Acquisition (3.047); however, these were still acceptable as the values were far below 5 (Hair et al., 2019).
<b>2. Size and significance of the structural path relationship—p – assess (R<sup>2</sup>)</b>	The R <sup>2</sup> value is between 0 and 1. Since 0 indicates no relationship and 1 is a perfect relationship, the higher the value the greater the explanatory power of the structural model. R <sup>2</sup> values of 0.75, 0.50, and 0.25 can be considered substantial, moderate, and weak, respectively.	All of the R <sup>2</sup> values were above the threshold (>0.05).  All of the endogenous constructs had a moderate value of between 0.50 and 0.75.  R <sup>2</sup> of Strategic Alliance Performance: 0.571 (57.1%); Dynamic Learning Capability: 0.768 (76.8%).
<b>3. The effect size – (f<sup>2</sup>)</b>	Effect size is assessed to determine whether the removal of a predictor construct from the structural model has a substantive impact on the endogenous construct. Based on guidelines from Cohen (Hair et al., 2019), f <sup>2</sup> values of 0.02, 0.15, and 0.35, respectively, represent small, medium, and large effects of an exogenous construct, while an effect size < 0.02 indicates no effect.	All the endogenous constructs had small and medium effects based on the threshold (≥ 0.02). (f <sup>2</sup> ) values: Dynamic Learning Capability (1.360), Relationship Capital (0.061), Surfacing (0.075), Joint Learning Structure (0.099), Knowledge Acquisition (0.134).
<b>4. Predictive relevance based on Q<sup>2</sup></b>	A value > 0 indicates that the predictive accuracy of the path model is acceptable for that construct.	All of the endogenous constructs had a Q <sup>2</sup> value > 0, thus indicating that the path model's predictive accuracy was acceptable. The Q <sup>2</sup> value assessment for all endogenous constructs is above 0: Strategic Alliance Performance (0.366), Dynamic Learning Capability (0.499).

## 5.2 Structural Model Analysis

We performed structural model analysis using Smart-PLS. Based on Hair et al. (2019), there are five steps in assessing a structural model: assessing collinearity, evaluating the size and significance of the structural path relationship, assessing  $R^2$ , assessing the  $f^2$  effect size, and evaluating the predictive relevance based on  $Q^2$ .

We first assessed collinearity, which involved computing the Variance Inflation Factor (VIF) for each indicator. All of the inner VIF values were below the threshold of 3 except for surfacing and knowledge acquisition, although this was still acceptable since the value was far below 5 (Hair et al., 2019). The second step was to conduct bootstrapping to evaluate the size and significance of the structural path relationship. The result showed that all the  $R^2$  values were above the threshold ( $>0.05$ ). The third step was to assess  $R^2$ ; here, the result showed that all the endogenous constructs had a moderate value of between 0.50 and 0.75. The fourth step was to assess the  $f^2$  effect size,

which involved determining whether the removal of a predictor construct from the structural model had a substantive impact on the endogenous construct. All of the endogenous constructs had small and medium effects. The fifth step involved assessing the predictive relevance based on  $Q^2$ . The blindfolding procedure was conducted to obtain the  $Q^2$  value. All of the endogenous constructs had a  $Q^2$  value greater than zero, which indicates that the path model's predictive accuracy is acceptable. The  $Q^2$  value assessment for all endogenous constructs is above zero. Table 4 contains a detailed breakdown of the results.

A path coefficient value of +1 indicates a perfect positive relationship, 0 indicates no relationship, and a value of -1 indicates a perfect negative relationship (Hair et al., 2019). All of the path coefficient values were positive since they were between -1 and 1. All of the correlations were significant, as indicated by the T statistic  $\geq 1.96$  (Hair et al., 2019). All of the correlations were connected since the P-values were below the threshold of  $\leq 0.05$  (Hair et al., 2019).

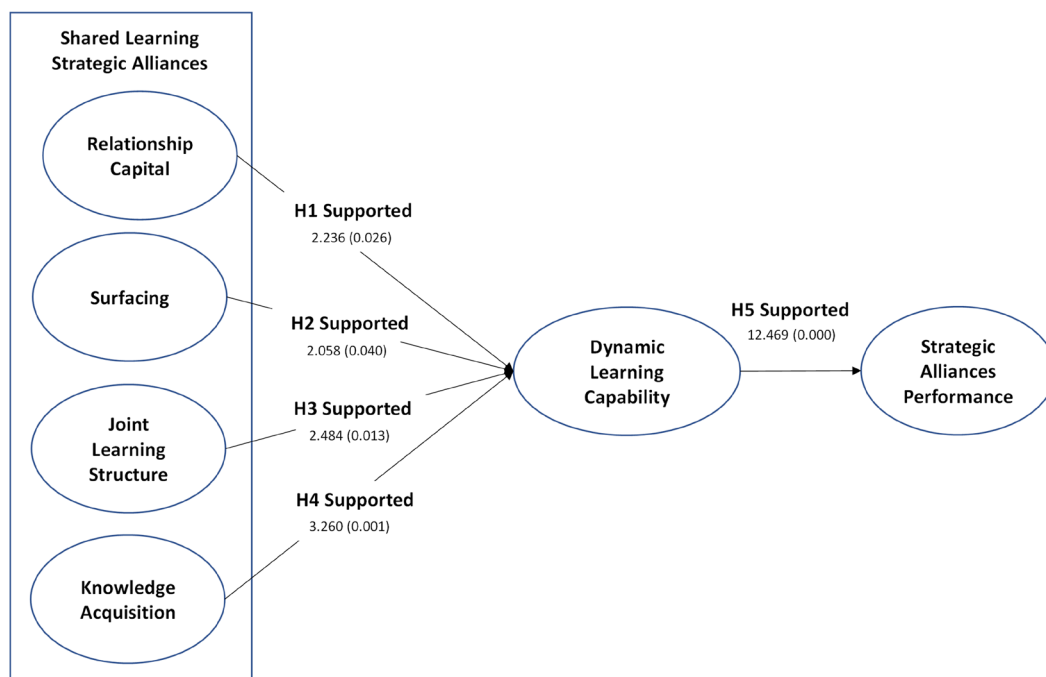


Figure 2: Path Diagram

The results for all hypotheses in the research model are summarised in Table 5 below:

*Table 5: Hypotheses Result*

No	Hypothesis	t-Value	P-Value	Remark	Summary
H1	Relationship Capital is positively related to dynamic learning capability.	2.236	0.026	Positive Significant	H1 Accepted
H2	Surfacing is positively related to dynamic learning capability.	2.058	0.040	Positive Significant	H2 Accepted
H3	Joint Learning Structure is positively related to dynamic learning capability.	2.484	0.013	Positive Significant	H3 Accepted
H4	Knowledge Acquisition is positively related to dynamic learning capability.	3.260	0.001	Positive Significant	H4 Accepted
H5	Dynamic Learning Capability is positively related to strategic alliance performance.	12.469	0.000	Positive Significant	H5 Accepted

## 6 Conclusion, Implication, and Future Studies

Several conclusions can be drawn from the above findings. First, all of the hypotheses examined in this research are accepted. This signifies that all constructs from a complete learning framework affect dynamic learning capability, while dynamic learning capability also affects strategic alliance performance.

Knowledge acquisition (t-value: 3.260; p-value: 0.001) has the greatest impact on creating dynamic learning capability. The strongest effect derives from the construct of alliances with the question: KAA\_3 In alliance with the alliance institution, we develop alliances and cooperation with participants in the development of joint research projects. This supports previous research by Ortiz et al. (2018) on how external knowledge acquisition formed by two dimensions, direct market exchange and cooperation agreement or strategic alliances, can affect strategic alliance performance through dynamic learning capability. It

indicates that the public institution and its alliances already conduct routine activities within a joint research project, as shown by how these activities provided the most support to the success of the strategic alliance performance.

Meanwhile, surfacing, notably from information internalisation, has the lowest impact on the creation of dynamic learning capability that leads to strategic alliance performance, with the question: SII\_3 In alliance with the alliance institution, employees participating in the alliance are entitled to use all the alliance information of our organisation. This finding implies a process of information internalisation, which refers to the organisation's process of expediting the alliance's proprietary technology under its ownership to become individual information (Yue et al., 2018). As such, there is scope for improvement within the information internalisation activities. This can be conducted by alliance institutions through socialisation on the availability of the alliance information result given the potential for a lack of awareness concerning its availability.

In the area of relationship capital, other improvement activities for the alliance institution and its wider strate-

gic alliances centre on the lowest impact on creating a dynamic capability that led to strategic alliance performance, with the question RCC\_4 We will definitely continue the relationships with the alliance institution. This emphasises the process of learning between alliances that can influence alliance performance through trust and relationship commitment (Shan et al., 2018). Improvement can involve a process of review and discussion among the alliance institutions to update the objective of forming strategic alliances and the aspects requiring improvement within both parties for the strategic alliances to continue.

Improvement in the area of joint learning structure is based on the lowest impact in creating a dynamic capability that led to strategic alliance performance with the question JLSSA\_8 In alliance with the alliance institution, we emphasise the importance of good organisational inter-functional relationships. This finding implies strategic alignment in which products and processes are improved and where the company's competencies, technology, and innovation are exploited and synergised while continuously stimulating the new knowledge available to functions in addition to cross-learning by enhancing the company's ability (Galeazzo et al., 2016). Alliance institutions can conduct this type of improvement by emphasising the importance of good organisational inter-functional relationships and through socialisation to build awareness in this area.

Improvement in dynamic capability can increase the performance of the collaboration and engender improvement in dynamic learning capability, as based on the lowest impact in creating strategic alliance performance with the question DLC\_1 In alliance with the alliance institution, we have routines to identify, value, and import new information and knowledge. This finding implies a positive effect of dynamic learning capability on the company's ability to create value (Rashidirad & Salimian, 2020). The improvement can be effected by the alliance institutions through routine gatherings, workshops, or group forum discussions to identify, value, and import new information and knowledge.

This research has certain limitations. First, it relies on limited data due to the availability of the respondents since they could only be reached by email. The limited volume of data can also be attributed to how only specific individuals, that is, those in charge, were eligible to respond. The restriction regulation from the international respondents served as a further constraint during the data collection process. Second, the types of strategic alliances established by the alliance institution were specific to the learning area in only certain topics related to the government, institution, or private organisation.

Future research may be warranted in organisations other than public institutions that have different characteristics and also to consider whether the constructs in a complete learning framework impact the creation of dynamic learning capability in supporting the objective of strate-

gic alliance performance. Furthermore, the scope of strategic alliance collaboration can be expanded beyond the learning area to include, for example, the manufacturing industry, export-oriented products, or digital services that require knowledge related to technology development. Future research may also comprise longitudinal studies to identify the data result trend, including the impact of the learning framework in areas other than dynamic learning capability, for example, dynamic integration and dynamic reconfiguration capability (Abbas, Raza, Nurunnabi, Minai, & Bano, 2019), to obtain a complete understanding.

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## Appendix: List of Questionnaires

No	Code	Questionnaires	SLF
<b>1.</b>	<b>Relationship Capital</b>		
<b>1.1</b>		<b>Trust</b>	
	<b>RCT_1</b>	We trust that the alliance institution's decisions are beneficial for both parties.	0.912
	<b>RCT_2</b>	We trust the alliance institution's professional competence and abilities.	0.899
	<b>RCT_3</b>	We trust the alliance institution's ability to implement the objectives.	0.897
	<b>RCT_4</b>	We highly trust the alliance institution through the formal contracts.	0.908
<b>1.2</b>		<b>Commitments</b>	
	<b>RCC_1</b>	We have a strong sense of loyalty to the relationships with the alliance institution.	0.900
	<b>RCC_2</b>	We dedicate enough resources to maintain the relationships with the alliance institution.	0.938
	<b>RCC_3</b>	We always try to improve the management of the relationships with the alliance institution.	0.901
	<b>RCC_4</b>	We will definitely continue the relationships with the alliance institution.	0.891
<b>2.</b>	<b>Surfacing</b>		
<b>2.1</b>		<b>Information Acquisition</b>	
	<b>SIA_1</b>	In alliance with the alliance institution, we archived all the history and information of the alliance.	0.897
	<b>SIA_2</b>	In alliance with the alliance institution, we record all important results and problems in the alliance in text or other forms (e.g. manually recorded, dashboard system).	0.880
	<b>SIA_3</b>	In alliance with the alliance institution, we regularly report major events to the organisation management team.	0.837
<b>2.2</b>		<b>Information Encoding</b>	
	<b>SIE_1</b>	In alliance with the alliance institution, we form and gradually improve our organisation's method of managing the alliance.	0.917
	<b>SIE_2</b>	In alliance with the alliance institution, we have an alliance manual and other documents to guide decision-making during the alliance period.	0.896
	<b>SIE_3</b>	In alliance with the alliance institution, we summarised the experience of the alliance that spreads to all other alliances	0.903
<b>2.3</b>		<b>Information Sharing</b>	
	<b>SIS_1</b>	In alliance with the alliance institution, we regularly exchange alliance information and experiences (e.g. webinars, policy news, workshops) with other colleagues of our organisation.	0.914
	<b>SIS_2</b>	In alliance with the alliance institution, we often exchange information and experience from the alliance (such as through webinars, policy news, and workshops) with the managerial staff of our organisation's other alliances via an informal process.	0.910
	<b>SIS_3</b>	In alliance with the alliance institution, our organisation encourages us to share alliance management experience (such as through webinars, policy news, and workshops) with other managerial staff in our organisation.	0.886

No	Code	Questionnaires	SLF
2.4		<b>Information Internalisation</b>	
	SII_1	In alliance with the alliance institution, we provide information on training and research programmes for employees participating in the alliance.	0.907
	SII_2	In alliance with the alliance institution, we provide external training for employees participating in the alliance.	0.883
	SII_3	In alliance with the alliance institution, employees participating in the alliance are entitled to use all the alliance information of our organisation.	0.789
3.		<b>Joint Learning Structure</b>	
3.1		<b>Strategic Alignment</b>	
	JLSSA_1	In alliance with the alliance institution, in our organisation, the goals, objectives, and strategies of the alliance are communicated to us.	0.816
	JLSSA_2	In alliance with the alliance institution, potential alliance objectives are screened for consistency with our business strategy.	NA
	JLSSA_3	In alliance with the alliance institution, at our organisation, the alliance process is kept in step with our business strategy.	0.842
	JLSSA_4	In alliance with the alliance institution, we believe that focusing on the long-term alliance will lead to better overall performance than focusing exclusively on short-term goals.	0.776
	JLSSA_5	In alliance with the alliance institution, we routinely review and update a long-range strategic plan for alignment with the alliance.	0.845
	JLSSA_6	In alliance with the alliance institution, our organisation's functions work interactively.	0.893
	JLSSA_7	In alliance with the alliance institution, the functions in our organisation cooperate to resolve conflicts between them when they arise.	0.824
	JLSSA_8	In alliance with the alliance institution, we emphasise the importance of good organisational inter-functional relationships.	0.770
	JLSSA_9	In alliance with the alliance institution, we are not encouraged to communicate well with different functions in the organisation. (Reverse Question)	NA
3.2		<b>Teamwork for Problem Solving</b>	
	JLSTS_1	In alliance with the alliance institution, we encourage employees to work together to achieve alliance common goals, rather than encourage competition among individuals.	NA
	JLSTS_2	In alliance with the alliance institution, we form teams to solve alliance problems.	NA
	JLSTS_3	In alliance with the alliance institution, employee teams are encouraged to try and solve alliance problems independently as much as possible.	NA
	JLSTS_4	In alliance with the alliance institution, we are encouraged to make suggestions related to the alliance on improving performance at this organisation.	0.803
	JLSTS_5	In alliance with the alliance institution, we encourage employees to exchange opinions and ideas related to the alliance.	0.894
	JLSTS_6	In alliance with the alliance institution, we encourage employees to work as a team related to this alliance.	0.869

No	Code	Questionnaires	SLF
<b>3.3</b>		<b>Goals Management Systems</b>	
	<b>JLSGS_1</b>	In alliance with the alliance institution, our reward system truly recognises the people who contribute the most to our organisation related to the alliance.	0.880
	<b>JLSGS_2</b>	In alliance with the alliance institution, the incentive system at this organisation is fair at rewarding people who accomplish company objectives through the alliance.	0.930
	<b>JLSGS_3</b>	In alliance with the alliance institution, the incentive system at this organisation encourages us to reach the organisation's goals through the alliance.	0.949
	<b>JLSGS_4</b>	In alliance with the alliance institution, our incentive system encourages us to pursue the organisation's objectives vigorously through the alliance.	0.905
<b>4.</b>		<b>Knowledge Acquisition</b>	
<b>4.1</b>		<b>Direct Exchange Acquisition</b>	
	<b>KAD_1</b>	In alliance with the alliance institution, we get the exquisites n the technological development organisation.	NA
	<b>KAD_2</b>	In alliance with the alliance institution, we obtain knowledge of the alliance institution's professional experience.	0.864
	<b>KAD_3</b>	In alliance with the alliance institution, we obtain knowledge from the external consultants or the alliance institution.	0.897
	<b>KAD_4</b>	In alliance with the alliance institution, we do not usually acquire technological licences. (Reverse Question)	NA
	<b>KAD_5</b>	In alliance with the alliance institution, we acquire complex technology or knowledge and incorporate it into equipment, specialised machinery, or systems.	0.551
<b>4.2</b>		<b>Alliances</b>	
	<b>KAA_1</b>	In alliance with the alliance institution, we develop alliances and cooperation with other organisations.	0.860
	<b>KAA_2</b>	In alliance with the alliance institution, we develop alliances and cooperation with the organisation's supply chain function.	0.910
	<b>KAA_3</b>	In alliance with the alliance institution, we develop alliances and cooperation with participants in the development of joint research projects.	0.914
<b>5.</b>		<b>Dynamic Learning Capability</b>	
	<b>DLC_1</b>	In alliance with the alliance institution, we have routines to identify, value, and import new information and knowledge.	0.833
	<b>DLC_2</b>	In alliance with the alliance institution, we have routines to assimilate new information and knowledge.	0.842
	<b>DLC_3</b>	In alliance with the alliance institution, we have transformed existing information into new knowledge.	0.852
	<b>DLC_4</b>	In alliance with the alliance institution, we use knowledge in value creation effectively.	0.877
	<b>DLC_5</b>	In alliance with the alliance institution, we develop new knowledge effectively.	0.863
	<b>DLC_6</b>	In alliance with the alliance institution, we do not learn new things within the organisation. (Reverse Question)	NA

No	Code	Questionnaires	SLF
6.	<b>Strategic Alliances Performance</b>		
	SAP_1	The objectives for which this partnership with the alliance institution was established are being met.	0.875
	SAP_2	We are satisfied with the strategic alliance performance of the alliance with the alliance institution.	0.891
	SAP_3	The alliance institution appears to be satisfied with the performance of the alliance.	0.793
	SAP_4	We are satisfied with the overall performance of the alliance with the alliance institution.	0.924
	SAP_5	The alliance institution does not appear satisfied with the overall performance of the alliance. (Reverse Question)	NA
	SAP_6	Our organisation's capabilities have been greatly enhanced due to the alliance with the alliance institution.	0.760