

## Triple Helix: the concept of synergy for SMEs to increase business performance

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**Abstract:** *The SME sector provides an essential economic contribution to the development and welfare of society, namely the Gross Domestic Product (GRDP). However, despite contributing to the economy and GDP, SMEs face several obstacles, including financial constraints, limited marketing and available resources. Synergy from various parties is needed to overcome this economic and social phenomenon. The intended synergy is between intellectuals, the government, and the business. The synergy of the three actors is termed the triple helix. This study aims to analyze the effect of the triple helix consisting of intellectuals, government, and the business community on the innovation and ability of SMEs, the effect of innovation on SMEs' ability and business performance, and the influence of ability on the business performance of SMEs. The sample was SMEs throughout Bali who are members of the Bali Bangkit exhibition, totaling 45 SMEs with criteria determined by the Bali Industry and Trade Department. Data analysis was carried out using the SmartPLS 3.0 program. The results show that SME innovation is influenced by academic support (intellectuals). The business community and government strongly support the ability of SMEs. Innovations made by SMEs can improve business capabilities. Likewise, SME business performance is determined by its innovation and capabilities. SMEs' business performance improvement based on innovations in business activities is determined more by academic support. The achievement of business results from SMEs based on their business capabilities tends to be determined by government support. The synergy increases the ability of SMEs to improve performance.*

**Keywords:** triple helix, intellectuals, government, innovation, ability, business performance

**JEL Codes:** L25, L26, G38

### 1. Introduction

The Small and Medium Industry (SME) sector makes an essential economic contribution to the development and welfare of the community. Small and Medium Industries strongly influence prosperity, growth, and economic development (Iromaka, 2006). Small and Medium Industries are also a primary means of community socio-economic development and impact poverty alleviation (Opafunso & Adepoju, 2014). Okhankhuele's (2017) research results reveal a positive and significant effect on Gross Domestic Product (GDP). Likewise, SMEs in Germany are the backbone of the economy in that country. Several research results show that the Small and Medium Industry (SME) sector is a sector that makes a significant contribution to the Gross Regional Domestic Product (GRDP). It is proven to resist economic problems, so SMEs are used as the leading sector of national economic development.

Despite contributing to the economy and GRDP, SMEs face several obstacles, including financial constraints and limited marketing and resources (Taiwo et al., 2012). SMEs face two challenges in facing the current global business competition. First, they must answer business opportunities that are very open due to globalization. Second, they must build and maintain a business network to advance their company. If not

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addressed immediately, these constraints and challenges will hinder their activities, performance, and sustainability (Karaev et al., 2007; Sapta et al., 2021). SMEs also experience these constraints and challenges in Bali. The Covid-19 pandemic that has hit the world, including Bali, has significantly impacted the Balinese economy (Amah et al., 2021; Aristana et al., 2022), including the SME sector. Therefore, various parties need synergy to overcome this economic and social phenomenon, including intellectuals, government, and business. The synergy of the three actors is termed the Triple Helix.

The Triple Helix concept is a concept in a transformational process that highlights the synergy between intellectuals, government, and business (Etzkowitz, 2014; Etzkowitz & Leydesdorff, 1995; Etzkowitz & Viale, 2010). Higher education centers on technology transfer and provides human resources and knowledge (Etzkowitz & Dzisah, 2008). Academic support must come from universities by researching skilled and knowledgeable personnel. The business community facilitates the application of knowledge, and human resource needs to help companies meet their goals (Sapta et al., 2021). Government plays an essential role in assisting by providing full support for policymaking and promoting and providing infrastructure.

Triple Helix is a synergy of intellectuals, government, and business essential for increasing innovation (Kim et al., 2012). Small and Medium Industries must always strive to improve quality and meet consumer needs and desires (Suardhika et al., 2018). Innovation is one way that is very important because of rapid technological changes, shorter product life cycles, and the increasing desire of consumers to obtain quality products. According to Widyani's (2019) research, innovation can improve the ability and performance of the company. However, other research results show that innovation as a risky and high-cost process has a negative effect on firm performance (Simpson et al., 2006). Similarly, innovative services and processes negatively impact the company (Damanpour, 2014). Limited resources are one of the factors that cause innovation to have a negative impact and harm the company. This condition requires SMEs to synergize with intellectuals, government, and businesses to improve business performance.

This study aims to analyze the effect of the triple helix consisting of intellectuals, government, and the business community on the innovation and ability of SMEs, the effect of innovation on SMEs' ability and business performance, and the influence of ability on ability on the business performance of SMEs.

## **2. Literature Review**

### **2.1. Triple Helix**

The progress of SMEs requires the support and synergy of the triple Helix: intellectuals, the government, and business. Local governments assist by providing full support in policymaking, promoting, and providing infrastructure. The government is vital for transferring knowledge and assistance to improve the creative economy. This indicates an increase in policies encouraging interaction between universities and businesses (Choi et al., 2015).

Intellectual support must come from universities that conduct research and knowledge development (Etzkowitz & Dzisah, 2008). Scholars, in this case academics, play a role in applying and sharing knowledge related to the business world. As a forum for academics, higher education provides human resources and knowledge to support socio-economic development. The activities of business actors play a role in producing goods and services that the community or consumers utilize. The government has the authority related to the regulations that regulate these business activities. The synergy is expected to be able to increase innovation from SME actors. Innovation in SMEs is manifested in product modification and is highly dependent on creativity and innovation (Afriyie et al., 2019; Campo & Trio, 2021). High innovation power in management will always create differentiating attributes in products, especially in creative industries. Consequently, innovation management has become a prominent strategy for overcoming competition increasingly. Innovation

needs to be thoughtfully and carefully explored and strengthened. This research will show the following innovation indicators: product innovation, process innovation, and organizational innovation (Exposito & Sanchis-Llopis, 2018; Expósito & Sanchis-Llopis, 2019).

Although the SME sector continues to grow, its ability to do business with large companies is still constrained. This phenomenon has proven to challenge SMEs in upgrading into larger-scale companies. Previous research has shown that when SMEs interact with large companies, there are advantages such as better organizational structures, management practices, and operations (Hallberg, 2000). These changes allow small companies to improve their technology, access finance, improve their governance, and, most importantly, become financially sound. Therefore, revenue streams grow and are more consistent, thus enabling small businesses to create more jobs. Furthermore, scaling to a larger company opens the door to more accessible credit and other business opportunities. Other advantages include abundant new knowledge, innovation, and business models (Benami & Carter, 2021).

Financial health is one of the main weaknesses of SMEs. Small and Medium Industries face the challenge of accessing external financial resources, limiting their capacity to develop new products, increase existing production, and capture emerging business opportunities. Effective SME management is critical in any business management (Koçyiğit & Akkaya, 2020).

## **2.2. Innovation**

Innovation occupies an essential place in increasing product sales success and company performance. One of the performance achievements and competitive advantages is determined by innovation (Ferreira et al., 2020). Innovation is an essential factor in improving business performance. Organizations supported by innovative capabilities can respond to environmental challenges more quickly to increase organizational efficiency (Jiménez - Jiménez & Sanz - Valle, 2005). Organizational innovation can bring new changes and success and improve business performance (Ali et al., 2016; Azar & Ciabuschi, 2017; Jiménez - Jiménez & Sanz - Valle, 2005). Innovation also is the successful implementation of creative ideas based on resources, management practices, and knowledge in the organizational context (Wang et al., 2014). Innovation in organizations will improve company performance. Innovation is realized by universities, businesses, and the government (Widyani et al., 2019). This result is supported by previous research that innovation results from an interactive process involving the three actors (Brem & Radziwon, 2017; Cavallini et al., 2019).

## **2.3. Business Ability**

Although the SME sector continues to grow, its ability to do business with large companies is still constrained. This phenomenon has proven to challenge SMEs in upgrading into larger-scale companies. Previous research has shown that when small firms interact with large firms, there are advantages such as better organizational structures, management practices, and operations (Hallberg, 2000). These changes allow small companies to improve their technology, access finance, improve their governance, and, most importantly, become financially sound. Therefore, revenue streams grow and are more consistent, thus enabling small businesses to create more jobs (Suardhika et al., 2021).

Furthermore, scaling to a larger company opens the door to more accessible credit and other business opportunities. Other advantages include abundant new knowledge, innovation, and business models. Financial health is one of the main weaknesses of SMEs (Suardhika, 2021). Small and Medium Industries face the challenge of accessing external financial resources, limiting their capacity to develop new products, increase existing production, and capture emerging business opportunities (Parker et al., 2009). The synergy between the government strongly supports effective SME management capabilities as a regulator and universities as resource providers (Kolehmainen et al., 2016). Increasing the ability of SMEs with synergies among the triple

helix actors will direct the business and avoid strategic failures. Therefore, the capabilities of SMEs consist of financial performance, capacity building, access to finance, and corporate governance.

## 2.4. Business Performance

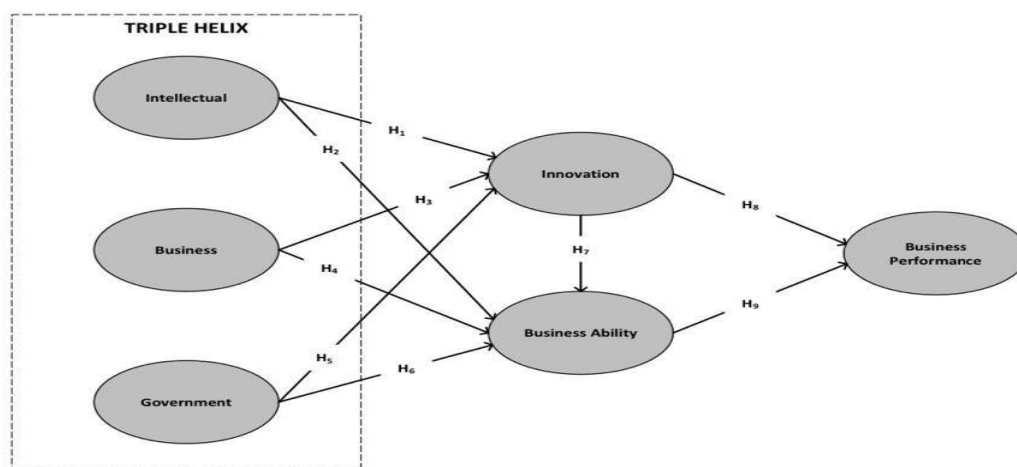
Small and Medium Enterprises (SMEs) now represent the strength of every economy and play a key role in promoting the growth and development of the country. Usually, the ability of SMEs is evaluated based on their performance. Performance measurement has a significant influence on human behavior that enables organizational improvement. Performance is a term for all concepts considering their success and activities. Financial performance refers to sales value, growth, and gross profit or profitability (Hanifah et al., 2019), while operational performance is defined as productivity. The performance of SMEs in this study consists of financial and operational performance (Exposito & Sanchis-llopis, 2018).

## 2.5. Research Hypotheses

- H1: Intellectuals have a significant effect on innovation
- H2: Intellectuals have a significant effect on a business's ability
- H3: Business actors have a significant effect on innovation
- H4: Business actors have a significant effect on a business's ability
- H5: The government has a significant influence on innovation
- H6: The government has a significant effect on a business's ability
- H7: Innovation has a significant effect on business capabilities
- H8: Innovation has a significant effect on business performance
- H9: The ability of SMEs has a significant effect on business performance

Based on the theoretical study and the results of previous research, a conceptual research framework was developed, as shown in Figure 1.

Figure 1: Research Concept Framework Research Hypothesis



### 3. Research Method

#### 3.1. Population and research sample

The research population is the SME in Bali who passed the selection with several criteria determined by the Disperindag Bali Province. As for the SMEs that meet the criteria of the research sample, there are as many as 45 companies. The criteria set by the Industry and Trade Department of Bali Province for the Bali Bangkit SME exhibition participants, which will then become the research sample, are:

1. Using local raw materials and labor
2. Environmentally friendly industry
3. Motifs and designs reflect the local culture.

#### 3.2. Research variable

The variables consisted of three exogenous, mediating, and endogenous variables.

- 1) Exogenous variable, namely Triple Helic (X), which consists of
  - a. Intellectual (X1), measured by three indicators, namely idea discovery (X1.1), mentoring (X1.2), networking (X1.3)
  - b. Business (X2), measured by three indicators, namely ethics (X2.1), IPR protection (X2.2), ownership (X2.3)
  - c. Government (X3), measured by three indicators, namely regulations (X3.1), laws (X3.2), policies (X3.3)
- 2) Endogenous variables, namely
  - a. Innovation (Y1) is measured by three indicators, namely process innovation (Y1.1), product innovation (Y1.2), and innovation implementation (Y1.3).
  - b. The ability of SMEs (Y2) is measured by three indicators, namely capacity building (Y2.1), access to finance (Y2.2), and corporate governance (Y2.3).
  - c. Business performance (Y3) in this study is measured by indicators of financial perspective (Y3.1), customer perspective (Y3.2), internal business process perspective (Y3.3), and learning and growth perspective (Y3.4).

#### 3.3. Variable operational definition

The definitions of each variable used in this study are as follows:

- 1) Intellectual (X1) is a pattern of intelligent and clear thinking using knowledge. The indicators used include the following.
  - a) The discovery of ideas (X1.1) is new ideas for improving the performance of SMEs.
  - b) Mentoring (X1.2) is an activity to guide the improvement of the performance of SMEs.
  - c) Network (X1.3) is a social structure formed to strengthen SMEs.
- 2) Business Community (X2) is an action taken to gain profit and value or added value.
  - a) Ethics (X2.1) is a moral value that regulates SMEs' business operations.
  - b) IPR protection (X2.2) is a right obtained by SMEs related to the security guarantee of the products they produce.
  - c) Ownership (X2.3) is socially supported power to control something owned.
- 3) Government (X3),
  - a) Regulation (X3.1) is an order, guideline, rule, or provision to regulate SMEs.
  - b) Law (X3.2), provisions, and regulations for SMEs stipulated by the authorities.
  - c) Policy (X3.3) is a series of concepts that serve as guidelines and the basis for implementing SME activities.
- 4) Innovation (Y1) is a way to make changes or new updates to achieve organizational and company goals. The indicators include the following.

- a) Process Innovation (Y1.1), namely periodic and continuous improvement in terms of processes
- b) Product Innovation (Y1.2): The business always tries to produce new products.
- c) Organizational innovation (Y1.3) is a management process that supports and strives towards cultural change to become skilled, consistent, and responsible in using innovation.
- 5) Business capability (Y2) is an SME's capacity to achieve specific goals. The indicators following.
  - a) Capacity building (Y2.1) is an effort SMEs make to increase production capacity.
  - b) Access to finance (Y2.2) is an effort for SMEs to gain trust related to capital and the ability to repay.
  - c) Corporate governance (Y2.3) is an effort for SMEs to maintain a coordinated management system.
- 6) Business performance (Y3) is a description of the work of an organization within a certain period. Business performance measurement indicators consist of:
  - a) The financial perspective (Y3.1) is the company's ability to generate profits.
  - b) Customer perspective (Y3.2) is continuous customer growth within a certain period.
  - c) Process perspective (Y3.3), namely the continuous improvement of the production process.
  - d) Learning and growth perspective (Y3.4), training activities to improve work skills.

### 3.4. Data analysis

The data were analyzed using the partial least squares (PLS) analysis technique, a statistical analysis method based on a structural equation model (Götz et al., 2010). Structural equation modelling (SEM) with PLS can be used to confirm that the observed construct variables are theoretically appropriate and to estimate the causal relationship of variables in the structural model (Hair et al., 2013). Furthermore, data analysis was carried out using Smart-PLS software, it is easy to apply and famous for structural equation modelling.

## 4. Results and Discussions

### 4.1 Research Instrument Test

#### 1. Validity Test

It tests the validity using the correlation method between the scores of the questions with the total score (indicator) at the alpha level of 0.05. The statement item is valid if it has a positive correlation and is more significant than 0.30 or the value of the correlation coefficient ( $r$ )  $> 0.30$ . Based on the results of the validity analysis with the SPSS program, showing that all the instrument validity test meet the valid criteria with the product-moment correlation, which is above the product-moment  $r$  value (0.3).

#### 2. Reliability Test

This test determines the extent to which the measurement results can be trusted or whether the respondent can disclose the existing data on the research variables. Calculation of reliability using the Cronbach Alpha analysis technique is considered reliable if greater than 0.6. In this case, a reliability test will be carried out for several variables used in this study, including intellectual variables, business, government, innovation, business ability, business performance, and SME performance.

### 4.2 Descriptive Analysis

The data analyzed was based on a questionnaire distributed and collected online from all targeted respondents, as many as 47 units for 21 days (August - September 2021). The examination results showed that all the questionnaires had been filled out and included in the analysis. A descriptive analysis will first be carried out in the theory testing stage. This analysis provides an overview of the respondents' profiles (gender, age, education, business commodities, business location, length of business, and the number of workers). Furthermore, an analysis was carried out to describe the variables studied.

Descriptive analysis of the profiles of research respondents was carried out by giving numbers, both in number (frequency) and percentage. Meanwhile, the description of the research variables determines the

respondents' perceptions of the statements about the variables studied in the research instrument. The mean used in this analysis is to determine the respondents' responses to the statements in the research instrument and perceptions of the variables studied.

*Table 1: Respondent Profile*

| No. | Descriptions                 | Quantity | Percentage (%) |
|-----|------------------------------|----------|----------------|
| 1.  | <b>Gender:</b>               |          |                |
|     | • Male                       | 23       | 48.9           |
|     | • Female                     | 24       | 51.1           |
| 2.  | <b>Age:</b>                  |          |                |
|     | • < 25 years                 | 10       | 21.3           |
|     | • 25 – 34 years              | 4        | 8.5            |
|     | • 35 – 44 years              | 14       | 29.8           |
|     | • 45 – 55 years              | 16       | 34             |
|     | • > 55 years                 | 3        | 6.4            |
| 3.  | <b>Education:</b>            |          |                |
|     | • High school or equivalent  | 20       | 42.6           |
|     | • Diploma                    | 4        | 8.5            |
|     | • Bachelor                   | 19       | 40.4           |
|     | • Postgraduate               | 4        | 8.5            |
| 4.  | <b>Business commodities:</b> |          |                |
|     | • Fabric Craft/Convection    | 20       | 17.7           |
|     | • Woodcraft                  | 9        | 23.7           |
|     | • Components/Finished House  | 5        | 14.9           |
|     | • Gold/Silver Craft          | 2        | 7.9            |
|     | • Iron Craft                 | 6        | 13.5           |
|     | • Stone Craft                | 3        | 8.4            |
|     | • Herbal Products            | 2        | 7.9            |
| 5.  | <b>Location:</b>             |          |                |
|     | • Denpasar City              | 8        | 17.0           |
|     | • Badung                     | 13       | 27.7           |
|     | • Tabanan                    | 1        | 2.1            |
|     | • Gianyar                    | 6        | 12.8           |
|     | • Klungkung                  | 6        | 12.8           |
|     | • Karangasem                 | 2        | 4.3            |
|     | • Buleleng                   | 6        | 12.8           |
|     | • Jembrana                   | 5        | 10.6           |
| 6.  | <b>Business length:</b>      |          |                |
|     | • < 3 years                  | 7        | 14.9           |
|     | • 3 – 7 years                | 9        | 19.1           |
|     | • 8 – 12 years               | 10       | 21.3           |
|     | • 13 – 17 years              | 3        | 6.4            |
|     | • > 17 years                 | 18       | 38.3           |
| 7.  | <b>Number of Workers:</b>    |          |                |
|     | • < 5 people                 | 18       | 8.8            |
|     | • 5 – 14 people              | 18       | 10.7           |
|     | • 15 – 24 people             | 4        | 28.4           |
|     | • 25 – 34 people             | 3        | 28.8           |
|     |                              | 4        | 23.3           |

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- > 34 people
- 

(Source: Analysis results)

Table 1 above shows that the profile of respondents based on gender indicates that the owners and managers of SMEs are primarily women, 51.1 percent, while men contribute 48.9 percent. This information indicates that the gait and interest of women in pursuing the world of entrepreneurship are increasingly prominent. Therefore, women's future role will be increasingly considered as entrepreneurs in small and medium enterprises, especially in the province of Bali.

The respondents' profile based on age shows that most SME managers are 45- 55 years old, with a distribution of 34 percent. Next, followed by the age of respondents 35-44 years (29.8 percent), aged under 25 years (21.3 percent), 25 -34 years (21.3 percent), and over 55 years (6.4 percent). Information from the distribution of respondents by age indicates that the dominant SME managers in Bali are productive and mature (aged 35-55 years). The education possessed by SME managers reflects their knowledge and skills in running a business. The education level of SME managers (Table 1) is primarily high school or equivalent, which is 42.6 percent, followed by 40.4 percent of those with bachelor's degrees. Meanwhile, those with diplomas and postgraduate degrees both contributed 8.5 percent. This information illustrates that the education owned by SME managers still tends to be limited. Thus, their abilities need to be improved through training and workshops. Their knowledge and skills in managing a business can continue to develop according to the demands of increasingly advanced and competitive business dynamics.

The business commodities' constancy is based on the high demand for these commodities in the market. Table 1 above shows that the fabric/convection industry dominates the commodities offered with a distribution of 42.6 percent and subsequent, followed by SMEs in woodcraft commodities (19.1 percent), iron crafts (12.8 percent), components/finished houses (10.6 percent), and stone crafts (6.4 percent). SMEs that produce gold/silver handicrafts and herbal products have a minor distribution of 4.3 percent. Strategic location in establishing a business plays a critical role in achieving business success. In addition to the availability of physical facilities and infrastructure, access and market information are crucial in determining a business's location. The Badung Regency area is the most strategic business location and is in demand by SMEs, with 27.7 percent. They were then followed by SMEs located in Denpasar City (17 percent), Gianyar Regency (12.8 percent), Klungkung Regency (12.8 percent), Buleleng Regency (12.8 percent), Jembrana Regency (10.6 percent), and at least in Tabanan Regency. (2.1 percent).

Business maturity is measured by the length of time the business recognizes and takes advantage of various opportunities and threats in its business environment. The profile of respondents based on the length of their business shows the dominance of SMEs. They have been operating for more than 17 years, 38.3 percent. Furthermore, SMEs are operating for 8 – 12 years (21.3 percent), for 3 – 7 years (19.1 percent), for under three years (14.9 percent), and for at least 13-17 years (6.4 percent). This condition reflects that most SMEs have matured in business activities because, during that time, business managers have understood their internal capabilities to perform manoeuvres as a form of responsiveness and adaptation to changes in the business environment.

Based on the large number of workers used in business operations, the dominant SMEs employing as many as 14 people and below, which is around 18 percent, and followed by SMEs which employ 15-24 people (8.5 percent), above 34 people (8.5 percent), and employs at least 25 - 34 people (6.4 percent). The overall information shows that most respondents are classified as small industries because most of the workforce is less than 20.

The following descriptive analysis determines the distribution of respondents' responses to statements in the research instrument, especially the variables studied. The analysis has calculated the average based on the percentage of respondents' responses to the research instrument from the variables studied, namely support from academics (intellectuals), support from the business community (business), support from the government (government), innovation in activities business (innovation), the ability possessed in the business (business ability), the achievement of business results (business performance). The higher the average value obtained, the better the respondents' responses to the instruments of the variables studied. As for the results of the descriptive analysis, both the average and standard deviation for intellectuals, business, government, innovation, capability effort, and business performance is shown in Table 2.

*Table 2: Descriptive Statistics*

| Variables                                        | Values      |                |
|--------------------------------------------------|-------------|----------------|
|                                                  | Mean        | Std. Deviation |
| <b>Intellectual</b>                              | <b>4.36</b> | <b>0.509</b>   |
| Knowledge (Intellec1)                            | 4.19        | 0.639          |
| Use of Technology (Intellec2)                    | 4.26        | 0.667          |
| Companion (Intellec3)                            | 4.49        | 0.547          |
| Mediator (Intellec4)                             | 4.51        | 0.560          |
| <b>Bisnis</b>                                    | <b>4.36</b> | <b>0.619</b>   |
| Business cooperation (Buss1)                     | 4.36        | 0.573          |
| Production optimization (Buss2)                  | 4.35        | 0.638          |
| Marketing network (Buss3)                        | 4.35        | 0.666          |
| Production facilities and infrastructure (Buss4) | 4.34        | 0.656          |
| <b>Government</b>                                | <b>4.25</b> | <b>0.677</b>   |
| Legality (Govern1)                               | 4.27        | 0.646          |
| Certification (Govern2)                          | 4.25        | 0.685          |
| Business capacity (Govern3)                      | 4.23        | 0.700          |
| HR Development (Govern4)                         | 4.25        | 0.710          |
| Grants/Business Assistance (Govern5)             | 4.23        | 0.713          |
| <b>Innovation</b>                                | <b>4.42</b> | <b>0.535</b>   |
| Product innovation (Innov1)                      | 4.50        | 0.605          |
| Process innovation (Innov2)                      | 4.26        | 0.695          |
| Marketing innovation (Innov3)                    | 4.60        | 0.524          |
| Organizational innovation (Innov4)               | 4.31        | 0.708          |
| <b>Business Ability</b>                          | <b>4.19</b> | <b>0.641</b>   |
| Global capability (Ability1)                     | 4.17        | 0.702          |
| Management (Ability2)                            | 4.20        | 0.681          |
| Production (Ability3)                            | 4.17        | 0.670          |
| Sales and marketing (Ability4)                   | 4.22        | 0.690          |
| Information systems (Ability5)                   | 4.16        | 0.660          |
| Learning (Ability6)                              | 4.21        | 0.657          |
| Logistics (Ability7)                             | 4.16        | 0.635          |
| External relation (Ability8)                     | 4.23        | 0.682          |
| <b>Business Performance</b>                      | <b>4.19</b> | <b>0.579</b>   |
| Financial performance (Perf1)                    | 4.26        | 0.634          |
| Customer performance (Perf2)                     | 4.13        | 0.661          |
| Internal business process performance (Perf3)    | 4.18        | 0.585          |
| Learning and growth (Perf4)                      | 4.23        | 0.670          |

(Source: Analysis results)

Information obtained from the descriptive analysis of each variable studied (Table 2) shows that the owners/managers of SMEs believe in the participation of academics (intellectuals) to support business activities to achieve expected business achievements. This result follows the average value obtained on the intellectual variable close to five (4.36). Furthermore, they support academics as mediators with related parties, especially providing access to the government, related industries, and banking parties. They also agree with the support from the business community, with an average score of 4.36. The hope of the owners or managers of SMEs from the support of this business community is to conduct business cooperation, especially production cooperation and joint ventures. They also believe in the role of support from the government (4.25), especially on business legality. The government's support for business legality intended by SME owners/managers is the ease of obtaining business permits and business entities in the industry.

SME owners/managers continue to innovate in their business activities to maintain their existence in the market (4.42). They tend to do innovation in business activities in marketing activities, such as making practical promotional efforts, marketing products in various ways, and looking for opportunities in new markets. In addition, the information conveyed is that SMEs believe in the ability of their businesses to compete (4.19). Their business capabilities are more about establishing relationships with business partners, especially maintaining good (long-term) relationships with customers and suppliers). SME owners/managers believe they have achieved their business results (4.19). Thus, the results of their operations have tended to be on financial performance, particularly in sales growth, followed by profit growth and asset returns.

#### 4.4 Inferential Analysis

In inferential analysis, Smart-PLS 3.0 software is used with the stages of analysis, namely evaluation of the outer model, evaluation of the inner model, and hypothesis testing. The evaluation of the outer model aims to prove the validity and reliability, including the suitability of the predictive model. Next, the inner model tests the hypothesis for the direct effect and examines the intervening variable for the indirect effect. The following will discuss the results of the evaluation of the outer model to confirm the validity and constructs to verify the measurement model.

The evaluation of the outer model is carried out concerning the level of validity and reliability of the measurement model positively on a variable construct. Following the SEM argument, this evaluation can be approved by testing the validity of the convergence, the variance of the extracted mean (AVE), and the level of reliability (Cronbach's alpha and CR). In addition, the evaluation will also examine discriminants, predictive models, and model fit (Goodness of Fit).

According to the directions of Hair et al. (2014), convergent validity is accepted in the measurement model if the indicators in the construct meet the requirements. The outer loading must be above 0.50. The AVE value must be higher than 0.50, and the reliability value (Cronbach Alpha and CR) must be higher than 0.70. Based on this, it appears that the coefficients and figures shown in Table 3 have described and confirmed the adequate level of validity and reliability of the variables studied.

*Table 3: Outer Model Evaluation Results*

| Variables    | Indicator | Outer Loading | AVE   | $\sqrt{\text{AVE}}$ | Cronbach Alpha | CR    |
|--------------|-----------|---------------|-------|---------------------|----------------|-------|
| Intellectual | Intellec1 | 0.778         | 0.600 | 0.775               | 0.773          | 0.856 |
|              | Intellec2 | 0.883         |       |                     |                |       |
|              | Intellec3 | 0.737         |       |                     |                |       |
|              | Intellec4 | 0.686         |       |                     |                |       |
| Business     | Buss1     | 0.583         | 0.646 | 0.804               | 0.856          | 0.809 |
|              | Buss2     | 0.858         |       |                     |                |       |
|              | Buss3     | 0.808         |       |                     |                |       |

|                      |          |       |       |       |       |       |
|----------------------|----------|-------|-------|-------|-------|-------|
| Government           | Buss4    | 0.780 |       |       |       |       |
|                      | Buss5    | 0.944 |       |       |       |       |
|                      | Goverm1  | 0.865 | 0.752 | 0.867 | 0.918 | 0.938 |
|                      | Goverm2  | 0.878 |       |       |       |       |
|                      | Goverm3  | 0.882 |       |       |       |       |
| Innovation           | Goverm4  | 0.871 |       |       |       |       |
|                      | Goverm5  | 0.838 |       |       |       |       |
|                      | Innov1   | 0.836 | 0.597 | 0.773 | 0.784 | 0.854 |
|                      | Innov2   | 0.775 |       |       |       |       |
|                      | Innov3   | 0.639 |       |       |       |       |
| Business Ability     | Innov4   | 0.825 |       |       |       |       |
|                      | Ability1 | 0.813 | 0.574 | 0.758 | 0.890 | 0.913 |
|                      | Ability2 | 0.805 |       |       |       |       |
|                      | Ability3 | 0.810 |       |       |       |       |
|                      | Ability4 | 0.900 |       |       |       |       |
| Business Performance | Ability5 | 0.717 |       |       |       |       |
|                      | Ability6 | 0.551 |       |       |       |       |
|                      | Ability7 | 0.612 |       |       |       |       |
|                      | Ability8 | 0.791 |       |       |       |       |
|                      | Perf1    | 0.583 | 0.559 | 0.748 | 0.731 | 0.832 |
|                      | Perf2    | 0.737 |       |       |       |       |
|                      | Perf3    | 0.906 |       |       |       |       |
|                      | Perf4    | 0.729 |       |       |       |       |

(Source: Analysis results)

Discriminant validity analysis is also an essential step in evaluating the outer model. Discriminant validity reflects the degree of divergence among a set of indicators to distinguish one construct from another. Discriminant validity criteria are met if the square root of the AVE value ( $\sqrt{\text{AVE}}$ ) that appears on the diagonal line must be greater than the correlation coefficient value of each variable (Hair et al., 2013). The evaluation results in the illustration Table 4 indicate that the discriminant validity of the studied variables has been met. Thus, the evaluation of the outer model is continued to ensure the predictive power of the formed model.

*Table 4: Results of Discriminant Validity Analysis*

| Variables            | Buss  | Ability | Perf  | Govern | Innov | Intellect |
|----------------------|-------|---------|-------|--------|-------|-----------|
| Business             | 0.804 |         |       |        |       |           |
| Business Ability     | 0.737 | 0.758   |       |        |       |           |
| Business Performance | 0.551 | 0.701   | 0.748 |        |       |           |
| Government           | 0.683 | 0.864   | 0.648 | 0.867  |       |           |
| Innovation           | 0.431 | 0.546   | 0.756 | 0.439  | 0.773 |           |
| Intellectual         | 0.588 | 0.697   | 0.664 | 0.561  | 0.606 | 0.775     |

(Source: Analysis results)

Special estimates are needed to determine the predictive power of a model. Therefore, the model was evaluated by considering the Q square ( $Q^2$ ). This value predictive relevance model measures how well the model generates the observed value (Chin, 1998). The value of  $Q^2$  is based on the coefficient of determination of all endogenous variables. The magnitude of  $Q^2$  has a value with a range of  $0 < Q^2 < 1$ , the closer the value to 1, the better the model. This structural model has three endogenous variables: innovation, business capability, and performance. It can be determined that three coefficients of determination ( $R^2$ ) are used as the

basis for calculating the  $Q^2$  predictive relevance model. The value of  $Q^2$  in Table 5 shows a value of 0.9743. These results indicate that 97.43 percent of the models formed have good predictive quality.

*Table 5: Results of Predictive Model Relevance Analysis*

| Structural Model                                                 | Endogenous Variables | R-square |
|------------------------------------------------------------------|----------------------|----------|
| 1                                                                | Innovation           | 0.382    |
| 2                                                                | Business Ability     | 0.866    |
| 3                                                                | Business Performance | 0.690    |
| Calculation: $Q^2 = (1 - [(1 - R^2_1) (1 - R^2_2) (1 - R^2_3)])$ |                      |          |
| $Q^2 = (1 - [(1 - 0.382) (1 - 0.866) (1 - 0.690)]) = 0.9743$     |                      |          |

(Source: Analysis results)

The term fit has a different meaning in PLS-SEM in comparison with CB-SEM. The goodness of fit (GoF) refers to the geometric mean of the extracted mean variance and the average  $R^2$  for the endogenous variables. The calculation of the average AVE value obtained is 0.621, and the average  $R^2$  is 0.646. Thus, the GoF value obtained is 0.633. The results of this GoF analysis show a strong fit of the model, namely: weak = 0.1; medium = 0.25; strong = 0.36. These results indicate that the model's overall fit is solid for estimating.

*Table 6: Direct Effect Results*

| No | Effect                                  | Path Coefficients | T-Statistics | Prob. | Remarks     |
|----|-----------------------------------------|-------------------|--------------|-------|-------------|
| 1  | Intellectual → Innovation               | 0.509             | 2.985        | 0.003 | H1 accepted |
| 2  | Intellectual → Business Ability         | 0.173             | 1.289        | 0.198 | H2 rejected |
| 3  | Business → Innovation                   | 0.050             | 0.222        | 0.825 | H3 rejected |
| 4  | Business → Business Ability             | 0.321             | 2.012        | 0.045 | H4 accepted |
| 5  | Government → Innovation                 | 0.119             | 0.507        | 0.612 | H5 rejected |
| 6  | Government → Business Ability           | 0.513             | 2.866        | 0.004 | H6 accepted |
| 7  | Innovation → Business Ability           | 0.078             | 0.907        | 0.365 | H7 rejected |
| 8  | Innovation → Business Performance       | 0.532             | 4.638        | 0.000 | H8 accepted |
| 9  | Business Ability → Business Performance | 0.410             | 3.463        | 0.001 | H9 accepted |

(Source: Analysis results)

In evaluating the inner model, the structural model is tested by testing hypotheses, both on direct and indirect effects. As shown in Table 6, intellectuality positively and significantly affects innovation ( $\beta=0.509$ ,  $T_{Stats}= 2.985$ ). These results indicate that hypothesis 1 ( $H_1$ ) is accepted. The more support from academics (intellectuals) increases, the greater the innovation of SMEs in business activities directly. However, academic support did not directly impact business ability ( $\beta=0.173$ ,  $T_{Stats}=1.289$ ). These results indicate that hypothesis 2 ( $H_2$ ) failed to be accepted and implies that the efforts made by academics to provide support to SMEs cannot directly determine the improvement of their business capabilities.

In another analysis (Table 6), support from the business community for innovation does not directly affect ( $\beta=0.050$ ,  $T_{Stats}= 0.222$ ). These results lead to the rejection of hypothesis 3 ( $H_3$ ). Therefore, these results can

provide meaning, but support from the business community does not necessarily determine the innovation of SMEs in business activities. However, support from the business community determine the increase in the business capacity of SMEs ( $\beta=0.312$ ,  $T_{Stats}=2.012$ ). Thus, hypothesis 4 ( $H_4$ ) is accepted. To Table 5, the role of government support did not directly affect innovation ( $\beta=0.119$ ,  $T_{Stats}=0.507$ ), so hypothesis 5 ( $H_5$ ) failed to be accepted. These results indicate that support from the government may not necessarily determine the increase in SMEs' innovation in business activities.

Other analysis results show that government support directly impacts business capacity ( $\beta=0.513$ ,  $T_{Stats}=2.866$ ). These results indicate that hypothesis 6 ( $H_6$ ) fails to be rejected and implies that the increased support provided by the government will ensure an increase in the business capacity of SMEs. Other results, innovation does not directly affect business ability ( $\beta=0.078$ ,  $T_{Stats}=0.907$ ), so hypothesis 7 ( $H_7$ ) fails to be accepted. This result means that the innovation efforts carried out by SMEs are not necessarily able to determine the improvement of their business capabilities. However, the innovation conducted by SMEs ensures an increase in their business results ( $\beta=0.532$ ,  $T_{Stats}=4.638$ ), and for these results, hypothesis 8 ( $H_8$ ) is accepted. Likewise, the business ability can determine the increase in business performance ( $\beta=0.410$ ,  $T_{Stats}=3.463$ ), and it can accept hypothesis 9 ( $H_9$ ). This result means that the ability of SMEs in business activities can determine the increase in the achievement of their business results.

In examining the indirect effects, the potential indirect effects (significant results) were identified on the specific indirect effects. The examination results show that two indirect effects have a significant effect, as shown in Table 6.

*Table 7: Results of Indirect Effects Examination*

| No | Effect                              | Path Coefficients | T-Statistics | Prob. | Remarks                                  |
|----|-------------------------------------|-------------------|--------------|-------|------------------------------------------|
| 1  | Intellectual → Business Performance | 0.271             | 2.370        | 0.018 | Innovation as a mediation variable       |
| 2  | Government → Business Performance   | 0.211             | 2.260        | 0.024 | Business ability as a mediation variable |

(Source: Analysis results)

Based on Table 6, innovation determines the indirect effect of intellectual on business performance ( $\beta=0.271$ ,  $T_{Stats}=2.370$  with probability below 0.05). These results indicate that SMEs' innovation in business activities is determined by the support of academics and later can increase the achievement of their business results. Another case is the indirect effect of government support on business performance, where business ability is an intervening variable ( $\beta=0.211$ ,  $T_{Stats}=2.260$  with probability below 0.05). These results indicate that the increase in the business capacity of SMEs tends to be determined by government support so that, in the end, they can improve their business performance. Meanwhile, the role of support from the business community cannot provide indirect variations for improving the business performance of SMEs. Based on the analysis results above, the overall model diagram of the research results is presented in Figure 2.

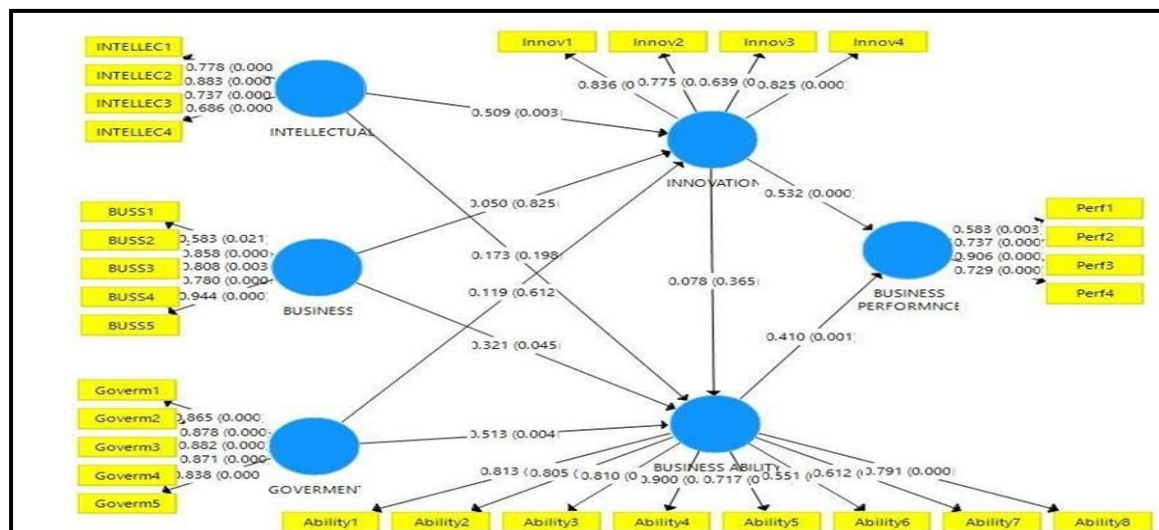


Figure 2: Full Model Analysis Result

## 5. Conclusions

Based on the analysis and discussion results, it can be concluded that the role of Triple Helix, which can determine SMEs' innovation in business activities, is determined by the support of academics. Meanwhile, the support of the business community and the government has not been able to determine the variations of increasing innovation from SMEs. Increasing business capacity tends to be determined by the business community's support and the government. Meanwhile, academic support cannot determine the increase in the business capacity of SMEs. SMEs' business performance increase is proven to be determined by their innovation and business capabilities. Meanwhile, innovations made by SMEs improve their business capabilities. Another finding shows that the increase in the business performance of SMEs based on innovations in business activities is determined more by academic support. The achievement of business results from SMEs based on their business capabilities tends to be determined by government support.

There are several limitations. The survey was limited to SMEs participating in the government's mentoring program, limiting the generalizability of the findings. Future research should discuss export SMEs in Indonesia. This study was cross-sectional, so information collected for different time frames and contingent effects could not be confirmed. This condition provides direction for future research to conduct longitudinal studies to overcome this limitation. Finally, future research can adapt this model by collaborating with quantitative and qualitative approaches. Apart from these limitations, this research can be used as a basis for future research in understanding the application of the triple helix concept as a determining factor for innovation and business capability so that the business performance of SMEs is increasing.

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