THE EFFECT OF KNOWLEDGE NETWORK, KNOWLEDGE INTEGRATION AND RELATIONAL CAPITAL ON INNOVATION CAPABILITY

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ABSTRACT
This study aims to determine and analyze the effect of intellectual capital on innovation capability. This study uses a quantitative approach. The independent variables are knowledge network, knowledge integration and relational capital. The dependent variable is the company's innovative capabilities. This study used a questionnaire with 17 questions. This study had 32 respondents from different startup companies in Indonesia. Analysis of the data used in the form of validity and reliability statistics, classical assumption tests, and multiple linear regression analysis. The results of the study show knowledge network have a significant effect on knowledge integration. Knowledge integration and relational capital also have a significant effect on innovation capability.

KEYWORDS
knowledge network, knowledge integration, relational capital, innovation capability

INTRODUCTION
Entrepreneurship exists all over the world. Starting from developed countries to developing countries, there are businesses that have emerged and the potential to grow. However, there are many new businesses that have not been able to survive or even experience failure (Nirwana & Dhewanto, 2015). Currently, the role of investors in startup growth continues to be studied. In the United States (USA), the relationship between "Internet of Things" startups and investors leads to technology convergence as a result of knowledge from investors. In the network analysis, it was found that investors have a role in connecting startups by forming an ideal topology to increase knowledge. Startups have investors, and more connections to other startups indicate greater technology convergence. Technological convergence occurs in network ventures as a result of investors playing the role of knowledge flow channels (Lim et al. 2018).

The life cycle of a business consists of four stages (startup, transition, scaling, and exit), each of which is defined by the main challenges faced by the founding team. The popular startup methodology emphasizes the disciplinary process of exploring, validating, and refining business concepts as important steps that must be taken in the process. However, in the beginning, a business person is required to get the right business concept. There is a transitional period where the founding team must build a solid team, in other words, it requires good relationships
within the company (relational capital) to achieve growth which in turn provides great business success for the company (Picken, 2017). Research that has been carried out on woven SMEs in Troso Jepara, the results show that there is a significant and positive influence on relational capital on innovation ability and performance. Based on these findings, it is known that innovation and performance capabilities can be improved through relational capital (Sulistyo & Siyamtinah, 2016). Software startups have long been a driver of economic growth and innovation.

Software startups have long been a driver of economic growth and innovation. The failure experienced by startups is largely due to a poor understanding of startup practices (Berg, 2018). Over the past 40 years, entrepreneurs and researchers have assumed that entrepreneurial networks are important to startup ventures, for example LinkedIn, which provides social networking information. It is known that LinkedIn is positively correlated with the number of funds raised by startup companies in building relationships between social networks and their success (Banerji, 2018).

Empirical research conducted by Wang et al. (2018) show that each dimension of the knowledge network improves the company's innovation performance, and the ability to integrate corporate knowledge has a mediating effect on the relationship between knowledge and innovation performance. The ability of business intelligence has an impact on network learning, innovation, and performance. So that attention must be paid to startups because of their impact on company performance. Network learning has a significant positive effect on performance. Because startups will try when they experience a lack of resources, and the team faces many demands (Caseiroa & Coelho, 2017).

LITERATURE REVIEW

Innovation Capability
Strategies based on innovative abilities are able to provide efficiency in increasing knowledge growth (Lin & Wei, 2018). The company's ability to improve external network relationships provides success for the company. Network relationships help shape innovation (Naqshbandi & Jasimuddin, 2018). The closer a company is to the network centre, the more knowledge and resources it acquires. This shows that the centrality of the network gives the company more acceptance. To expand, integrate, and apply the knowledge acquired, companies need to develop their knowledge integration capabilities. According to Zahra, Velde, and Larraneta (2007) defines knowledge integration as the company's ability to process and apply existing or new technology. In a highly competitive industrial environment, companies want to optimize innovation performance, so it is necessary to integrate and apply the knowledge that has been acquired.

The effective activity of a company is derived from the ability to develop and maintain good relationships with the environment. This is the basis for relational capital to provide potential in generating cooperation and resources from the various parties involved. Development and creation of relational capital provide good conditions for starting, forming, developing, and maintaining relationships between various members within the company and other parties around it. Relational capital emerges as a result of good thinking actions on strategic decisions
and organized actions. The emergence of relational capital must start with the right actions to create a successful innovation (Gansiniec, 2016).

**Intellectual Capital**
Good relationships lead to a level of corporate development that contributes to achieving competitive advantage, competitiveness, access to valuable and unique resources (Edvinsson & Malone, 2001; Ford et al., 1998). This means that cooperation provides benefits for companies such as reducing operational costs, sharing risks, obtaining knowledge, gaining access to markets, and transfer of technology. The relationship that emerges is based on trust by various parties because of the awareness that some processes can be carried out more effectively (Kale, Singh, and Perlmutter, 2000; Uzzi & Lancaster, 2003).

Relational capital arises because of the potential or opportunity to gather within a company. Relational capital is influenced by external and internal conditions (Heide and John, 1992). The character of relational refers to principles, rules, prohibitions, guidelines, instructions, and rules (Macneil, 1981). The ability of a company to form a relationship with its environment can lead to creation & innovation (Roberts, 2001) and the ability to create innovative ideas (Chesbrough, 2006). Based on this explanation, the researcher determined three hypotheses, as seen in Figure 1.

![Figure 1. Model Hypothesis](image)

There are three hypotheses in this study, namely:
H1: Knowledge Network a significant effect on Knowledge Integration.
H2: Knowledge Integration a significant effect on Innovation Capability.
H3: Relational Capital a significant effect on Innovation Capability.

**RESEARCH METHOD**
This study used a questionnaire with 17 questions. This study has 32 respondents from various startup companies in Indonesia. The selected respondents are startup owners or those who work at startups in Indonesia. The independent variables used were knowledge network (X1), relational capital (X2), and knowledge integration (M). Dependent variables used were knowledge integration (M) and innovation capability (Y). This study uses a quantitative approach. According to Sugiyono (2014: 13), the quantitative approach is a method that is objective, measurable, rational, and systematic and the research data used is in the form of numbers and analysis using statistics. Simple Linear Regression Analysis is used to analyze the
relationship between one independent variable and one dependent variable. Simple linear regression analysis aims to predict and predict the value of the independent variable under independent influence (Siregar, 2013). In analyzing the data the researchers used the SPSS version 21 application.

**RESEARCH RESULT AND DISCUSSION**

Table 1. Descriptive Statistics Test

| Item | SS | S  | CS | CTS | TS | STS | Mean |
|------|----|----|----|-----|----|-----|------|
| X1.1 | 15 | 46.9 | 11 | 34.4 | 5 | 15.6 | 3.1 | 0 | 0.0 | 0.0 | 168 | 5.3 |
| X1.2 | 15 | 46.9 | 12 | 37.5 | 2 | 6.3 | 3 | 9.4 | 0 | 0.0 | 0.0 | 167 | 5.2 |
| X2.1 | 16 | 50.0 | 9 | 28.1 | 5 | 15.6 | 1 | 3.1 | 1 | 3.1 | 0.0 | 166 | 5.2 |
| X2.2 | 13 | 40.6 | 14 | 43.8 | 2 | 6.3 | 3 | 9.4 | 0 | 0.0 | 0.0 | 165 | 5.2 |
| M1.1 | 10 | 31.3 | 16 | 50.0 | 5 | 15.6 | 0 | 0.0 | 1 | 3.1 | 0.0 | 162 | 5.1 |
| M1.2 | 12 | 37.5 | 11 | 34.4 | 6 | 18.8 | 3 | 9.4 | 0 | 0.0 | 0.0 | 160 | 5.0 |
| M1.3 | 11 | 34.4 | 15 | 46.9 | 5 | 15.6 | 1 | 3.1 | 0 | 0.0 | 0.0 | 164 | 5.1 |
| Y1.1 | 18 | 56.3 | 12 | 37.5 | 2 | 6.3 | 0 | 0.0 | 0.0 | 0.0 | 0.0 | 176 | 5.5 |
| Y1.2 | 18 | 56.3 | 11 | 34.4 | 3 | 9.4 | 0 | 0.0 | 0.0 | 0.0 | 0.0 | 175 | 5.5 |
| Y1.3 | 19 | 59.4 | 11 | 34.4 | 2 | 6.3 | 0 | 0.0 | 0.0 | 0.0 | 0.0 | 177 | 5.5 |
| Y1.4 | 13 | 40.6 | 16 | 50.0 | 2 | 6.3 | 1 | 3.1 | 0 | 0.0 | 0.0 | 169 | 5.3 |
| Y1.5 | 17 | 53.1 | 12 | 37.5 | 2 | 6.3 | 1 | 3.1 | 0 | 0.0 | 0.0 | 173 | 5.4 |
| Y1.6 | 17 | 53.1 | 12 | 37.5 | 2 | 6.3 | 1 | 3.1 | 0 | 0.0 | 0.0 | 173 | 5.4 |
| Y1.7 | 8  | 25.0 | 11 | 34.4 | 8 | 25.0 | 2 | 6.3 | 2 | 6.3 | 1.0 | 146 | 4.6 |
| Y1.8 | 15 | 46.9 | 14 | 43.8 | 3 | 9.4 | 0 | 0.0 | 0.0 | 0.0 | 0.0 | 172 | 5.4 |
| Y1.9 | 16 | 50.0 | 12 | 37.5 | 4 | 12.5 | 0 | 0.0 | 0.0 | 0.0 | 0.0 | 172 | 5.4 |
| Grand Mean | 176 | 5.5 |

Based on seventeen statements representing the four indicators, the average score reached 5.3. According to Bhattacherjee (2012) descriptive research is directed at making careful observations and detailed documentation of an interesting phenomenon. This observational review must be based on the scientific method. This analysis was performed by calculating the mean value of each latent construct or variable which was interpreted into 3 categories according to Levine et al. (2011). The result of the descriptive statistical output is 5.3, so it is categorized as high, between 4.34-6.00.

Table 2. ValidityTest

| Item | Correlation Coeficient | Sig. | Criteria |
|------|------------------------|------|----------|
| 1    | 0.587                  | 0.000| Valid    |
| 2    | 0.669                  | 0.000| Valid    |
| 3    | 0.786                  | 0.000| Valid    |
| 4    | 0.794                  | 0.000| Valid    |
| 5    | 0.823                  | 0.000| Valid    |
| 6    | 0.640                  | 0.000| Valid    |
| 7    | 0.649                  | 0.000| Valid    |
| 8    | 0.705                  | 0.000| Valid    |
| 9    | 0.732                  | 0.000| Valid    |
| 10   | 0.757                  | 0.000| Valid    |
| 11   | 0.810                  | 0.000| Valid    |
Based on the results of the validity test in Table 3, it is known that the value of all items has a significant value <0.05, which is equal to 0.000. In determining whether all items are valid or not, it can be seen at the significance value. It can be seen if all items are valid because the significant value is <0.05. In addition, it can compare r count with r table. It can be seen that the r table is 0.349. Based on the results of the r value count that the value is > 0.349, it is known if the validity test is fulfilled.

### Table 3. Reliability Tests

| Cronbach’s Alpha | N of Items |
|------------------|------------|
| 0.933            | 17         |

Based on table 4 it is known that the Cronbach Alfa value is > 0.05, which is 0.933. According to Sekaran (2003), a Cronbach Alfa value of less than 0.6 is unreliable while 0.6 and above are declared reliable. According to the SPSS results, the Cronbach Alfa value is 0.933 so that the reliability test is fulfilled.

### Table 4. Multiple Linear Regression Test

| Independent Variable | Dependent Variable                  | Constant | Beta Coefficient | t Test | p-Value | Criteria |
|----------------------|-------------------------------------|----------|-----------------|--------|---------|----------|
| Knowledge Network (X1) | Knowledge Integration (M)           | 2.207    | 0.538           | 3.732  | 0.001   | Significant |
| Knowledge Integration (M) | Innovation Capability (Y)          | 2.326    | 0.597           | 6.741  | 0.000   | Significant |
| Relational Capital (X2) | Innovation Capability (Y)          | 3.005    | 0.448           | 5.684  | 0.000   | Significant |

Based on the results of the multiple linear regression test in Table 5, the following equation is determined:

\[ Y = 2.207 + 0.538X1 \]

The meaning of the above equation shows that the constant value (a) is 2.207 and the knowledge network coefficient (b) is positive, namely 0.538; It can be interpreted that an increase in knowledge network by 1 unit, it will increase knowledge integration by 0.538, the level of t test is 3.732 and a probability value of 0.001 (p < 0.05). So that H1 is accepted, meaning that the knowledge network has an influence on knowledge integration.

\[ Y = 2.326 + 0.597M \]

The meaning of the above equation shows that the constant value (a) is 2.326 and the knowledge integration coefficient (b) is positive, namely 0.597; It can be interpreted that an
increase in knowledge integration by 1 unit will increase innovation capability by 0.597. t test of 6,741 and a probability value of 0.000 (p <0.05). So that H2 is accepted, meaning that knowledge integration has an influence on innovation capability.

\[ Y = 3.005 + 0.448X2 \]

The meaning of the above equation shows that the constant value (a) is 3.005 and the value of the relational capital coefficient (b) is positive, namely 0.448; It can be interpreted that an increase in relational capital is 1 unit, it will increase innovation capability by 0448. t test is 5,684 and a probability value of 0,000 (p <0.05). Thus, H3 is accepted, meaning that relational capital has an influence on innovation capability.

**CONCLUSION**

Based on the t test results, it can be seen that the knowledge network variable has a significant effect on network integration so that H1 is accepted. This happens because of the company's ability to increase its knowledge network and provide success for the company because knowledge networks help shape innovation. The t test results show that knowledge integration has a significant effect on innovation capability so that H2 can be accepted. This is because the company exchanges and shares knowledge with partners so that the company can apply its advantages to the company. In addition, the company develops its knowledge integration capabilities to expand, integrate and apply the knowledge acquired. This is because human capital in the startup business in Indonesia is running well, namely the good ability of employees to focus on combining individual factors and the strengths of a group of company workers with the knowledge, abilities, behavior, energy, and commitment of employees to the desire to share information, participation in a team and focused on company goals. The t test results show that relational capital has a significant effect on innovation capability, so that H3 can also be accepted. This is due to the right actions of the company to create successful innovations. This action is like making a relationship that leads to a level of corporate development that contributes to achieving competitive advantage, competitiveness, access to valuable and unique resources. This means that cooperation provides benefits for companies such as reducing operating costs, sharing risks, obtaining knowledge, gaining access to markets, and technology transfer.

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