

Factors Influencing Dynamic Capabilities In Technology Start-Up In Indonesia

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ABSTRACT

This paper studies the influence of Entrepreneurial Orientation and Network Capabilities toward Dynamic Capabilities in Technology Based Start-up in Indonesia. The research has following objectives (1) To investigate the role of Entrepreneurial Orientation (EO) toward Dynamic Capabilities (DC), (2) To investigate the role of Network Capabilities (NC) toward Dynamic Capabilities (DC) and 3) To investigate the dimensions most influential in the relationships. The research is done in the context of Technology-based Start-up in Indonesia. Quantitative data are gathered using a set of questionnaire, measuring these variables. The data are analyzed using Structural Equation Modeling techniques with SmartPLS Software. The findings confirms the positive influence of the variables and shown which are most influence dimensions of NC and EO positively affected DC. The results are discussed in the Dynamic capabilities theoretical framework.

Keywords

Technology Based Start-up, Dynamic Capabilities, Networking Capabilities, Entrepreneurial Orientation, Entrepreneurship

Article Received: 10 August 2020, Revised: 25 October 2020, Accepted: 18 November 2020

Introduction

Dynamic Capabilities is recognized as a company's ability to integrate, learn, perform reconfiguration and make changes. (Eisenhardt & Martin, 2000; Teece, 2014; Teece, Pisano, & Shuen, 1997; Winter, 2003). Dynamic Capabilities is very important for Technology-based Start-up Company. (Jones, 2014; Mohamad F., Ahmad Z., & Siti N., 2014) One of the unique features of technology is the speed of development. As an example, new technologies in the information industry "force" the construction of computers with larger memory capacity, faster data processing, higher resolution visual effects, and so on. (Davidsson, Achtenhagen, & Naldi, 2005; Garnsey, Stam, Heffernan, & Hugo, 2003; Zahra, Sapienza, & Davidsson, 2006). Thus, for Technology-based company, Dynamic Capabilities, or the ability to adapt to rapid environmental changes, is essential for the survival and to reach established and sustained condition.

A large number of researches in Dynamic Capabilities have been studied in the context of established companies. (Ambrosini, 2009; Teece et al., 1997; Winter, 2003) Research on Dynamic Capabilities in Technology-based Start-up companies to spur growth get more attention recently. (Ng, 2013; Paradkar, Knight, & Hansen, 2015; Protogerou, Caloghirou, & Lioukas, 2012; Sahlen, Granjansen, & Rygh, 2014; Shi, Xu, & Green, 2014; Strehle, 2006; Telussa, Stam, & Gibcus, 2006; Wu, 2007).

This study has been done in the Technology Based Start-up Industry in Indonesia. Recently, as also happened in many parts of the world, Technology-based Start-ups in Indonesia grow rapidly. As a fast developing country with large number

of people, the Internet users in Indonesia also grow very fast. The fundings also flow to Indonesia from the investors who see the potential of this business. This give the opportunities for Technology-based Startup to develop in Indonesia. (Olsen, Gergele, Chua, & Bartolucci, 2015; Van Welie, Abraham, Willemsen, & Nagelvoort, 2015)

In order to survive in a Technology-based Industry environment, Start-up Companies must be oriented towards strategies that prioritize innovation and risk-taking courage. This strategy is known as Entrepreneurial Orientation (EO). Entrepreneurial Orientation (EO) is a policy and practice that provides the basis of decision making and Entrepreneurial action. It is a concept that involves the process of planning, analysis, decision making and at the same time, reflects the organizational culture and value of the company. (Lumpkin & Dess, 1996, 2001).

Newly founded Technology Based Start-up companies, usually do not have enough resources to meet their needs to survive, growth and become established company. The need to develop new products or services as well as the need to enter the market, requires a lot of funding, human capital and other resources. The company can obtain the resources needed through the business network with partners who can help get access to the required resources. Networking Capabilities (NC) is a concept proposed to optimize the company's efforts to build and maintain its business network (Roininen, 2008; Semrau, 2010; Ujjual, 2008).

We consider Dynamic Capabilities, Entrepreneurial Orientation and Networking Capabilities are important variables in the context of the Technology-based Start-up Company. All variables mentioned are complex variables and have multiple dimensions. This research seek to

investigate the relations of the dimensions of Entrepreneurial Orientation and Networking Capabilities toward the Dynamic Capabilities variables.

Objectives of This Study

Specifically the objectives of this study are: 1) To investigate the significance of the relationship amongst Entrepreneurial Orientation toward Dynamic Capabilities in the Technology-based Start-up Company in Indonesia and 2) To investigate the significance of the relationship amongst Networking Capabilities to Dynamic Capabilities in the Technology-based Start-up Company in Indonesia and (3) To study the most influential dimensions that affect Dynamic Capabilities from the variables Entrepreneurial Orientation and Networking Capabilities.

Literature Review

Dynamic Capabilities

Dynamic Capabilities demonstrate the company's ability to combine and coordinate internal and external resources, to acquire and internalize new knowledge from environment and other organizations. Furthermore Dynamic Capabilities also enable the company to change and reconfigure the internal resource base to adapt to external situation. (Eisenhardt & Martin, 2000; Teece et al., 1997; Winter, 2003) Dynamic Capabilities is a proposed concept to be a prerequisite for achieving sustainable competitive advantage. This concept is influenced by the well-known Strategic Management Core Competence of Corporation (Prahalad, Hamel, & June, 1990).

Building a Technology-based Start-up is a dynamic process, complex and risky. This process is also carried out under conditions of uncertainty. (Damodaran, 2009; Lasch, Roy, & Yami, 2007; Solomon, 2010). Dynamic Capabilities (DC) has been accepted by scholars as a factor that can help to improve performance, enter into new markets, and manage resources (Ambrosini, 2009; Jiao, Alon, & Cui, 2011; Zahra et al., 2006).

Entrepreneurial Orientation

Various studies have explained the benefits of EO for Technology-based Start-up to grow and maintain their position in a competitive environment. (Ferreira, Azevedo, & Ortiz, 2011; Lumpkin & Dess, 1996; Rauch, Wiklund, Lumpkin, & Frese, 2004)

The positive effects that Entrepreneurial Orientation (EO) has attracted much attention from researchers in the field of entrepreneurship to explain the performance of successful companies. Start-up with high EO have been investigated could increase their sales growth, improved long-term financial performance (Rauch et al., 2004; Wiklund & Shepherd, 2003), increase early-stage performance of the life cycle (Lumpkin & Dess, 2001), and overcoming environmental and resource constraints (Wiklund & Shepherd, 2005).

The essence of Entrepreneurship is to enter into something new (New entry). This can be achieved by entering into established markets with new products or services, or

entering into new markets with established products or services. New Entry is the act of launching a new venture, with a Start-up Company, through an established company or through "internal corporate venturing" Entrepreneurial Orientation (EO) refers to the process, practice and decision making leading to New Entry. Entrepreneurial Orientation reflects the level at which an organization has a tendency to take risks, be innovative and become aggressive in competition.

Entrepreneurial Orientation is found in companies where strategic leaders and corporate cultures simultaneously build the drive to innovate, take risks and aggressively pursue new opportunities.

Networking Capabilities

The importance of networking on entrepreneurial success has been studied by many researchers in the field of entrepreneurship. Networking is a social and economic process whereby individuals and organizations develop sustainable relationships with stakeholders for the purpose of accessing support and facilitating exchange and cooperation. (Alguezaui & Filieri, 2010; Firms, 2012; Hoang & Antoncic, 2003; Perales, 2015; Semrau, 2010).

Only involved in a business network relationship may not merely improve the competitive performance of a Start-up Company. The researchers further point out that most individuals and organizations often have few strong ties but weaker ties. Weak ties are more difficult to manage because of the lack of mutual interaction relationships and thus it is difficult to continue being nurtured for further cooperation. To benefit from networking, companies may need to have the ability to develop and manage not just one relationship, use appropriate governance mechanisms, share routines, and initiate the necessary changes in fostering relationships.

Networking Capabilities of a company is the ability to initiate, collect, develops and integrates knowledge and relationships with different partners that can help achieve company goals. This means that the Start-up company should be the ability to coordinate between companies that collaborate including knowledge of the business partner, the strengths and weaknesses of the partners, the intended markets, the products and services offered and the Management team and assets owned. This capability also includes the skills of fostering relationships with other companies as well as the skills to communicate internally. (Walter, Auer, & Ritter, 2006)

Research Methodology

This section will describe the Research Methodology carried out consisting of two main aspects, 1) Variable Operationalization, 2) Data Acquisition and 3) Data Analysis Procedure. In the stage of Variable Operationalization and Data Acquisition, the explanation focuses on instruments, actions, data collection methods as well as populations and samples.

This is followed by an explanation of Data Analysis methods that include Data screening, and the analysis of the data collected. The Data screening shows the procedures to be applied for managing missing data, testing of normality and outlier. Furthermore it will be the result of the

evaluation of Construct Validity and Goodness-of-Fit. Construct Validity is done by the calculation of Cronbach's Alpha, Composite Reliability, and Average Variance Extraction (AVE) of the construct.

Variables Operationalization

Variables Operationalization is an important step in research to be able to explain clearly about the variables to be studied. This section will explain the dimensions of the variables under study.

Dynamic Capabilities

Dynamic Capabilities (DC) of a company is the ability to integrate, build, and reconfigure internal and external competencies to address rapidly changing environments. DC has following dimensions that will be used in this research.

1) Sensing Capabilities refers to the ability of an organization to detect opportunities that can be utilized. The sensing capability let the company be able to scan the external factors outside the company. The ability to calibrate the internal state of the company is a requirement for changing and adapting. To realize this required adjustments will seem to depend on the ability to scan the environment, evaluate markets and competitors, and quickly reconfigure ahead of the competition (Gupta, 2014; Salunke, Weerawardena, & McColl-Kennedy, 2009)

2) Learning Capabilities refers to the ability to improve operating capabilities with newly acquired knowledge. The Company can learn to do repetitions and experiments that enable an activity to perform better and faster. It also allows new production opportunities whether it's a product, services or features to be identified. (Salunke et al., 2009)

There is a relationship between the ability of Sensing and Learning because learning enhances the ability of business units to detect opportunities in new markets (Acikdilli & Ayhan, 2013; Zahra et al., 2006). However, the ability of sensing and the ability to learning is a different ability because the sensing focus on gathering new market intelligence, while learning focuses on the use of market intelligence to create new knowledge. (Cohen & Levinthal, 1990; Mannes, 2013)

3) Integrating Capability is the ability to combine new knowledge into internal capability by creating a shared understanding of the entire organization. (Lawson & Samson, 2001). Reconfiguration depends on the integration of knowledge, resources, and new assets (Eisenhardt & Martin, 2000; Telussa et al., 2006). This occurs because the reconfiguration of existing operational capabilities requires collective organizational logic and interaction patterns together. Because the new knowledge created by learning is largely shared by the individual, that knowledge must be integrated to the collective level (Acikdilli & Ayhan, 2013; Cabral, 2010; Teece et al., 1997).

In the context of Start-up Company, because the operational capability is supra-individual and not within individuals, the Start-up Company should integrate individual knowledge and patterns of their interactions into collective systems to propagate the new knowledge into joint operational capabilities.

Entrepreneurial Orientation

Entrepreneurial Orientation (EO) is the effort of the Top-level Management of a Start-up Company to commit to innovations related to services and markets and has the courage to take risks and strive to be first with innovation and aggressively trying to outdo competitors.

Three main dimensions of Entrepreneurial Orientation adopted in this research are:

1) Proactive. The Proactive concept can be described as taking the initiative by anticipating and pursuing new opportunities related to future demand. (Lumpkin & Dess, 1996).

2) Courage To Take Risks (Risk-taking). This dimension refers to a firm's willingness to engage in business-related risks calculated on the market, even when the results are uncertain (Lumpkin & Dess, 2001). Firms with risk-taking behaviors are described as bold and aggressive in pursuit of opportunities. The concept of risk-taking has been associated with entrepreneurship since the 1800s, when the term entrepreneurship was first discussed. Risk-taking as the EO dimension is considered to be one of the key attributes of entrepreneurship.

3) The Ability To Be Innovative. (Innovativeness). This capability is in the products and services offered. Innovativeness is the tendency of a company to support new ideas, experiment with creative process that may produce new products, services or technology process.

Innovation reflects the company's tendency to engage and support the formation of new ideas and creative process that can lead to new products, new technology and market process (Frese, Bausch, Schmidt, Rauch, & Kabst, 2012; Lumpkin & Dess, 1996, 2001; Rauch et al., 2004). A large number of innovation researchers agree that innovation plays an important role in solving business problems and challenges, which in turn gives the Company the ability to succeed (Carvalho, 2016; Paradkar et al., 2015; Price Waterhouse Coopers, 2013; Shi et al., 2014; Ujjual, 2008). The company's innovative ability to update their market offerings becomes critical to their ability to survive and grow as they operate under conditions of global competition, rapid technological advances and resource scarcity. Innovation is also important when companies have to cope with the lifecycle of an increasingly shortened business model. (Dadfar, Dahlgard, Brege, & Alamirhoor, 2013; Dan, 2009; Saunila & Ukko, 2012; Still & Satell, 2017).

Networking Capabilities

Networking Capabilities is a complex capability and consists of five major dimensions:

1) Coordination with Collaborating Firm (CCF): The ability to coordinate between collaborating companies that connect participating companies to a mutually supportive interaction network. Start-up company is done within a network, hence it is necessary to coordinate inter-organizational activities that connect participating companies into a mutually supportive interaction network. The ability of collaboration can also be seen as the ability to enable leveraging of internal and external knowledge bases. From a particular point of view, this ability is associated with information

management, relationship management and other systemic interdependent capabilities.

2) Knowledge of Partners KOP: Knowledge of business partners to better manage and monitor partners and activities within the network to determine whether there are conflicting or overlapping partners or activities. It is necessary for a Start-up Company to manage and monitor its partners and their activities to determine whether there are conflicting or overlapping partners or activities. In addition, Start-up companies need to be aware of potential partners, as well as suppliers, customers, and competitors, and their capabilities, requirements, and whether they can be trusted or not.

3) Ability to Build Relationships With Partners. Relational Skills with Other Firms (RSOF): The skills of building relationships with other companies in order to understand and adapt to various social situations, responding to various information and social conditions from within and outside the organization. Relational skills cover such aspects as communication skills, problem-solving skills, interpersonal skills, conflict management skills, empathy, emotional stability, self-reflection, fairness and cooperative". In this view, firms with good relational skills are very likely to develop effective and sustainable mutually beneficial relationships among network partners, which in turn enhance the competitive advantage leading to performance.

4) Internal Communication Skill (ICS) Skills: Internal communication skills generate feedback from experience based on prior collaboration as well as ongoing collaborative experience.

5) Building New Relationships (BNR): Ability to build relationships with new Business Partners. (Roininen, 2008; Semrau, 2010; Walter et al., 2006)

After the Variable Operationalization step is complete, it can be better described, how the research model will be able to works.

Figure 1 shows the Research Model that has the dimensions of each variable shown. The Hypothesis based on this research model are:

- H1: Proactiveness significantly affects Dynamic Capabilities.
- H2: Innovativeness significantly affects Dynamic Capabilities.
- H3: Risk Taking significantly affects Dynamic Capabilities.
- H4: Coordination with Cooperating Firm significantly affects Dynamic Capabilities.
- H5: Knowledge of Partner significantly affects Dynamic Capabilities.
- H6: Building New Relation significantly affects Dynamic Capabilities.
- H7: Internal Communication Skill significantly affects Dynamic Capabilities.
- H8: Relation skill significantly affects Dynamic Capabilities.

Data Acquisition

Population refers to the overall entity units that will be studied in this research. The population to be researched is a Technology-based Start-up that has been at least one year old and has experienced growth from the time of establishment to the data collection.

All Start-up Companies analysed must have a legal entity in the jurisdiction of the Republic of Indonesia. The total population are taken from the 1) Database of Kementrian Riset dan Pendidikan Tinggi, (Ministry of Research and Higher Education), 2) Indonesian Technology Start-up community and 3) Techinasia Website (<http://techinasia.com>) is a blog that discusses the dynamics of Technology-based Start-up in Asia. The website also has databases of Technology-based Start-up and its funding phase, which provides data from Technology-based Start-up in Indonesia and other countries in Asia. A set of questionnaire distributed, containing research question based on variable operationalization. A sample of $n=63$ Start-ups with proper responses being analysed in this study.

Data Analysis

This section will explain the method of Data Analysis of the results by using predetermined approach. In measuring reliability, the Cronbach's Alpha and Composite Reliability calculated. In order to be comply to the goodness of fit, the results of Cronbach Alpha need to be greater than 0.7 and Average Variance Extracted to be greater than 0.5. Once the measurement model met the elements of validity and reliability, Structural Equation Modeling applied to do the model analysis. The computation was executed using bootstrapping method with SmartPLS software.

Results And Discussions

This section reveals findings of the data analysis. It can be seen that all variables met the validity and reliability requirements as described in Table 1.

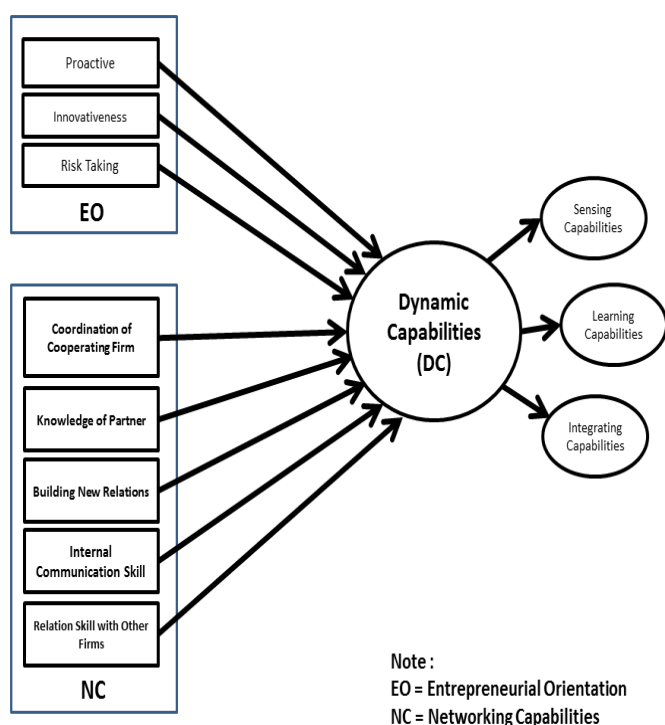


Figure 1. Research Model

Table 1.Results of validity and reliability

Scales	Cronbach's Alpha	Average Variance Extracted	Composite Reliability
Sensing Capabilities	0.838	0.756	0.903
Learning Capabilities	0.816	0.731	0.891
Integrating Capabilities	0.703	0.771	0.871
Entrepreneurial Orientation			
Proactiveness	0.857	0.777	0.913
Innovativeness	0.895	0.778	0.885
Risk Taking	0.776	0.808	0.893
Network Capabilities			
Coordinating of Cooperating Firm	0.818	0.667	0.855
Knowledge of Partner	0.807	0.716	0.883
Building New Relation	0.844	0.762	0.905
Internal Communication Skill	0.809	0.724	0.887
Relation Skill with Other Firm	0.811	0.715	0.878

The hypothesis concerning Entrepreneurial Orientation addressed the relationship between Proactiveness (H1), Innovativeness (H2) and Risk Taking (H3) toward Dynamic Capabilities. As shown in Table 2, the result shows, Innovativeness and Risk Taking (Hypothesis 2 and 3) have significant relationship whereas Proactiveness (Hypothesis 1) not showing evidence of significant relationship.

The hypothesis concerning Networking Capabilities addressed the relationship between Coordinating of Cooperating Firm (H4), Knowledge of Partner (H5), Building New Relation (H6), Internal Communication Skill (H7) and Relation Skill with Other Firm (H8), toward Dynamic Capabilities. As shown in Table 2, the result shows, Knowledge of Partner, Building New Relation and Internal Communication Skill (Hypothesis 2 and 3) have significant relationship whereas Coordinating of Cooperating Firm and Relation Skill with Other Firm (Hypothesis 2 and 3) not showing evidence of significant relationship.

Table 2. Results of measurement model

Scales	O.S*	T-Stats.	P-Values
Proactive → Dynamic Capabilities	0.178	1.491	0.136
Innovativeness → Dynamic Capabilities	0.239	2.700	0.007
Risk Taking → Dynamic Capabilities	0.268	3.414	0.001
Coordination of Cooperating Firms → Dynamic Capabilities	-0.139	1.480	0.1390
Knowledge of Partner → Dynamic Capabilities	0.219	2.650	0.0070
Building New Relation → Dynamic Capabilities	0.252	2.840	0.0050
Internal Communication Skill → Dynamic Capabilities	0.297	4.006	0.0006
Relation Skill with Other Firm → Dynamic Capabilities	0.058	0.737	0.4620

*O.S = Original Sample

Implication of Research

There are two types implication that arise from this research. Theoretical implication in terms of scholarship will contribute to the development of Dynamic Capabilities theory, Entrepreneurial Orientation and Networking Capabilities in the realm of Technology Based Start-up. Practical implication will be useful as a reference in the dynamics of Technology Based Start-up in Indonesia. These implications can be summarized as follows:

Theoretical Implications: This study investigates the relationship of Network Capabilities and Entrepreneurial Orientation toward Dynamic Capabilities in the Start-up Technology context. The results of this research contribute to the development of the concept and theories of Dynamic Capabilities in Technology-based Start-up context, in Indonesia.

Practical Implications: By doing this research, it is hoped that the results can develop knowledge about the factors affecting DC as an important factor in Technology-based Start-up. In order to improve the performance of Technology-based Start-up companies and serve as a catalyst for value creation especially in the context of Indonesian Start-up Company.

Conclusions

The main contribution of this study was the introduction of the influencing factor of variables Entrepreneurial Orientation and Networking Capabilities toward Dynamic Capabilities.

The limitation of this research is that the Start-up company were sampled from three-sources; Techinasia databases, Kemenristekdikti databases and Indostartup community. However, there are still Start-ups not listed in those databases. For the future work, It is important to investigate the effect of Ecosystem where the Start-ups grow and operate. We also plan to engage an in-depth interview to clarify the findings of the quantitative results.

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