

START-UP ENTREPRENEUR HUMAN VIRTUAL INTELLIGENCE
DECISION-MAKING TRANSFORMATION MODEL

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Dedicated to:

My parents Prof. dr. H. Mahyuddin NS, SpOG(K)

and dr. Hj. Halipah Amin, SpTHT, MM

My brother M. Taufik Roseno and family

My sister Anggia Primasari and family

My parents-in-law Ir. H. Abdul Rasjid Hanafiah, MSc and Ertati Ratna Dewi

My sister-in-law Wiwiek Widharti and family

My brother-in-law Fahri Kurniawan and family

My lovely wife dr. Ariesti Karmila, SpA, MKes

My children Aliyah Zafira Pratomo and Arjuna Makhdar Pratomo

Thank you for your prayers and understanding

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ABSTRACT

Start-up entrepreneurs (SE) have to make fast and quality business decisions in multiple contexts, despite resource limitations and a chaotic environment. Many start-up ventures fail at an early stage due to poor entrepreneurial decision-making that lacked practical business knowledge, skills, and experience. Unlike Chief Operating Officers of large and mature organizations, who make important decisions collectively, a SE has to make decisions on his own. However, his decision-making could be improved significantly if he is able to consult a virtual network of advisors, mentors, business partners, crowd and relevant parties through social network media supported by Information and Communication Technology that is termed as Human Virtual Intelligence (HVI). The main issue is how can an *ad-hoc* decision-making SE be transformed into a consultative decision-maker who can make effective business decisions in multiple contexts? To find out, an in-depth study on SE decision-making practices was conducted to determine their decision-making lifestyle. The study employed mixed methods including crowdsourcing, psychometric profiling and a lifestyle field study. All the results were summed up as a SE decision-making lifestyle mind map. Using Checkland's Soft System Methodology and Snowden's Cynefin Framework, a transformation model was developed. The Mind Map was converted into a Rich Picture consists of the relationship among the participating stakeholders. A Root Definition was formulated and it then assisted the CATWOE analysis to finally derive the activity model. To validate this model, Action Research was conducted on members of the Indonesian Young Entrepreneurs Association. In the validation, a pre-test comprising of questions on business decisions was used to determine the SE decision-making competency. From the test, the worst performers were selected as candidate for transformation. An HVI awareness program consisted of focus group workshop, coaching clinic and group assignment was developed and then provided to the candidates for them to quickly learn how to utilize HVI to make effective business decisions. After finishing the program, a post-test was conducted to determine if the candidate's business decision-making has improved. A control test on unintervened sample was also conducted to confirm the improvement made by the model. From the study, it was found that more than 80% SE made effective decisions in multiple contexts, confirming that the HVI decision-making transformation model can improve SE business decision-making practices. The findings contribute to the field of Knowledge Management by assisting SE to make better business decisions through consulting knowledge agents in a HVI network.

ABSTRAK

Usahawan yang baru bermula perlu membuat keputusan perniagaan yang pantas dan berkualiti dalam pelbagai konteks walaupun dibatasi sumber dan persekitaran tidak menentu. Kebanyakan usaha baru gagal pada peringkat awal disebabkan oleh keputusan keusahawanan yang kekurangan pengetahuan, kemahiran dan pengalaman perniagaan praktikal. Berbeza dengan Ketua Pegawai Eksekutif organisasi besar dan matang yang membuat keputusan penting secara kolektif, para usahawan baru perlu membuat keputusan secara sendiri. Walau bagaimanapun, keputusan mereka boleh meningkat sekiranya mereka mendapat khidmat rundingan melalui suatu rangkaian maya yang terdiri daripada penasihat, mentor, rakan perniagaan, pihak berkaitan melalui media sosial yang disokong oleh Teknologi Maklumat dan Komunikasi yang diistilahkan sebagai Kecerdasan Maya Manusia (HVI). Persoalan utamanya ialah bagaimanakah usahawan baru yang membuat keputusan *ad-hoc* boleh diubahkan menjadi pembuat keputusan perundingan berkesan dalam pelbagai konteks? Untuk mendapat jawapan, suatu kajian mendalam mengenai amalan usahawan baru membuat keputusan telah dijalankan untuk menentukan gaya membuat keputusan mereka. Kajian ini menggunakan kaedah bercampur yang terdiri daripada *crowdsourcing*, profil psikometrik, dan kajian lapangan gaya hidup. Semua hasil kajian dirumuskan sebagai peta minda gaya membuat keputusan usahawan baru. Dengan menggunakan *Soft System Methodology* Checkland dan Rangka Kerja *Cynefin* Snowden, suatu model transformasi telah berjaya dibangunkan. Peta minda tersebut telah ditukarkan ke dalam bentuk *Rich Picture* yang merangkumi hubungan semua pihak berkepentingan. Suatu *Root Definition* telah dirumuskan dan ini kemudian membantu analisis CATWOE yang akhirnya menghasilkan model aktiviti. Untuk mengesahkan model ini, Kajian Tindakan telah dijalankan kepada ahli Persatuan Usahawan Muda Indonesia (HIPMI). Dalam validasi ini, suatu pra-ujian yang terdiri daripada soalan perniagaan telah digunakan untuk menentukan kompetensi membuat keputusan usahawan baru. Daripada ujian tersebut, usahawan baru yang teruk keputusannya telah dipilih sebagai calon transformasi. Sebuah program pendedahan HVI telah dibangunkan dan kemudian diajarkan kepada calon supaya dapat mempelajari dengan cepat bagaimana menggunakan HVI untuk membuat keputusan perniagaan. Setelah menamatkan program, suatu pasca-ujian telah dilakukan untuk menentukan jika cara membuat keputusan calon telah meningkat. Suatu ujian kawalan terhadap sampel tanpa gangguan juga telah dilakukan untuk mengesahkan penambahbaikan yang dihasilkan oleh model. Daripada hasil kajian, lebih daripada 80% keputusan yang dibuat dalam pelbagai konteks telah meningkat dan ini mengesahkan bahawa model membuat keputusan transformasi boleh meningkatkan amalan usahawan baru dalam membuat keputusan perniagaan. Hasil kajian ini menyumbang kepada bidang pengurusan pengetahuan dengan cara membantu usahawan baru membuat keputusan yang lebih baik melalui perundingan dengan agen pengetahuan dalam rangkaian HVI.

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LIST OF ABBREVIATIONS

CATWOE	-	Customer Actors Transformation Worldview Owner Environment
CEO	-	Chief Executive Officer
CFO	-	Chief Finance Officer
CMO	-	Chief Marketing Officer
CTO	-	Chief Technical Officer
DSS	-	Decision Support System
FB	-	Facebook
GEM	-	Global Entrepreneur Monitor
HIPMI	-	Himpunan Pengusaha Muda Indonesia
HVI	-	Human Virtual Intelligence
ICT	-	Information and Communication Technology
IS	-	Information System
MNC	-	Multi National Company
MSE	-	Micro and Small Enterprise
SDM	-	Strategic Decision-Making
SE	-	Start-up Entrepreneur
SECI	-	Socialization Externalization Combination Internalization
SEDMEP	-	Start-up Entrepreneur Decision-making Enhancement Program
SME	-	Small and Medium Enterprise
SOHO	-	Small Office Home Office
SSM	-	Soft Systems Methodology

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CHAPTER 1

INTRODUCTION

1.1 Overview

Entrepreneurship is critical to the development and well-being of society (Carter, 2011; Gawell *et al.*, 2009). Entrepreneurs create jobs (Fölster, 2000; Shane, 2009). They drive and shape innovation, speeding up structural changes in the economy (Bosma & Levie, 2010). By introducing new competition, they contribute indirectly to productivity. Entrepreneurship is thus a catalyst for economic growth and national competitiveness (Kelley *et al.*, 2011).

According to the 2010 Global Entrepreneurship Monitor survey, an estimated 63 million entrepreneurs expected to hire at least 5 employees over the next 5 years, and 27 million of these individuals anticipated hiring 20 or more employees in 5 years (Kelley *et al.*, 2011). This illustrates the contribution of entrepreneurship to job growth across the globe including the area of Information and Communication Technology (ICT). Thus, there is increasing recognition worldwide of the important role of entrepreneurship as an engine of job creation and economic growth (Pei *et al.*, 2010)

Based on data from the World Bank *Entrepreneurship Snapshots* 2010, the impact of the 2008–2009 financial crisis on new business creation should be of special interest, given the importance of entrepreneurs and young firms to the continued dynamism of the modern market economy (World Bank, 2011). As policy makers and business leaders worldwide seek to restart the engines of economic

growth in the wake of the crisis, they may find a renewed focus on entrepreneurship to be particularly valuable (Klapper & Love, 2011).

1.2 Problem Background

Although many reports (Bosma & Levie, 2010; Carree & Thurik, 2010; Valliere & Peterson, 2009; Wright *et al.*, 2012) agree that entrepreneurship is very important as a catalyst for economic growth and competitiveness, encouraging people to become entrepreneurs is not easy. Even if they have chosen to pursue this path, there is no guarantee that they will have a successful business (Tece, 2010). Many of them venture into business to grasp a golden opportunity or due to various push factors, but they lack prior practical business knowledge, skills, and experience. McKenzie and Sud (2008) and Timmons and Spinelli (1994) suggests that the majority of such ventures fail, even among those who have education and training in entrepreneurship (Karlan & Valdivia, 2011).

Most of the start-up entrepreneurs (SE) create a very small company at the beginning, and it is expected to grow up in the following years. Global Entrepreneurship Monitor defines nascent and new entrepreneurs as entrepreneurs who have been in business for less than three and a half years (Kelley *et al.*, 2011). European Union also defines MSEs as small business with less than 50 employees (Schmiemann, 2008). In Asian countries such as Indonesia, micro and small enterprises is defined as a company whose assets are not more than Rp 500 million (USD50,000) and the revenue are not more than Rp 2.5 billion (USD250,000) a year (Bank Indonesia, 2008). In Malaysia, small services, primary agriculture and ICT industries are defined as enterprises who have sales turnover from RM200,000 (USD62,500) to less than RM1 mil (USD312,500) or full time employees between 5 and 19 (SME Corporation Malaysia, 2012)

Unfortunately, the size and the age of the organization are also play a role in the failure of the business (Brush & Chaganti, 1999). A simple management mistake is likely to lead to sure death of micro and small enterprises hence no opportunity to

learn from its past mistakes. Lack of planning, improper financing and poor management have been posited as the main causes of failure of small enterprises (Lepoutre & Heene, 2006; Longenecker *et al.*, 2006). Lack of credit has also been identified as one of the most serious constraints facing MSEs and hindering their development (Berger & Udell, 1995; Blanchflower *et al.*, 2003).

There are also many reasons why start-up entrepreneurs (SE) fail in the early stages of their entrepreneurial activities. Some of the most common reasons are a lack of experience, lack of good entrepreneurial skills, lack of self-efficacy, lack of a support system for productivity, and lack of information management (Duchesneau & Gartner, 1990). Becoming a successful entrepreneur also requires a lot of motivation, character, personality, attitude, and intelligence (Pandey & Tewary, 2011). Moreover, SE's failure does not only depend on their abilities, competencies, experiences, and other internal factors, but also on external factors. A macro environment analysis shows that the political will of the government, local and global economic conditions, socio-cultural situations, as well as technology development are among the most significant failure factors of entrepreneurs (Abdullah *et al.*, 2009; Chong, 2012; De Jong & Den Hartog, 2007).

While SE are willing to take risks and have positive beliefs about the availability of opportunities around them, their competitive advantage also depends on customers who are willing to buy from them, vendors who are willing to supply them, substitute products, the threat of new entrants, and competitive rivalry within the industry (Porter, 1998). Moreover, they must understand so many things in the business cycles, such as the financing cycle, expenditure cycle, human resource payroll cycle, production cycle, and revenue cycle (Fuerst, 1995; Romney *et al.*, 2000). With these many factors and parameters to consider, no SE can complete his/her tasks in normal ways. SE should not face the brutality of the new economy alone; they must find help from other sources in and outside the organization.

1.3 Problem Statement

Compared to Chief Executive Officers (CEO) of bigger and more mature organizations, where mistakes in decision-making have minimal effects due to the organizational strength, wrong decisions in small start-up ventures may lead to disaster and the demise of the business (Goel & Göktepe-Hultén, 2012; Gunasekaran *et al.*, 1996; Hayter, 2011). A SE is obligated to make quick and correct decisions in complex environment. Unfortunately, due to limited resources, skills, and experience, a SE cannot rely solely on his own competency or count on his subordinates to make better and more effective business decisions.

Based on this situation, a SE should consult relevant parties and various information systems to provide him as much as possible information to make more informed decisions. In this case, an Information System (IS) model can be utilized to improve a SE's decision-making practices by transforming his decision-making lifestyle.

1.4 Research Questions

From the problem statement, a research question arises as follows:

How to transform the ad-hoc decision-making lifestyle of a SE to become more consultative?

The research question above can be broken down further into the following sub-research questions:

- i. *What is the current situation of a SE's decision-making lifestyle?*
- ii. *What kind of Information Systems model can be utilized to transform a SE's decision-making lifestyle?*
- iii. *How can the transformation model be validated?*

1.5 Research Objectives

The objectives of this research are as follows:

- i. To study and understand the SE's decision-making lifestyle
- ii. To develop an Information Systems model that can be utilized to transform a SE's *ad-hoc* decision-making lifestyle into a more consultative approach
- iii. To implement and validate the transformation model

1.6 Research Scope

The scope of this research is limited to the following:

- i. The target population is SE from the Indonesia Young Entrepreneur Association (HIPMI) in the South Sumatra region.
- ii. In this study, SE are defined as those who start a micro and small enterprise (MSE) with assets amounting to not more than one billion rupiah (roughly equal to US\$100,000), have less than 50 employees (including the management), and have run the business for no more than three-and-a-half years (Bank Indonesia, 2008; Kelley *et al.*, 2011; Schmiemann, 2008).
- iii. This study focuses primarily on SE's decision-making lifestyle, but it also briefly covers the general lifestyle and profile of SE related to their decision-making.

The research scope is summarized in the following Figure 1.1.

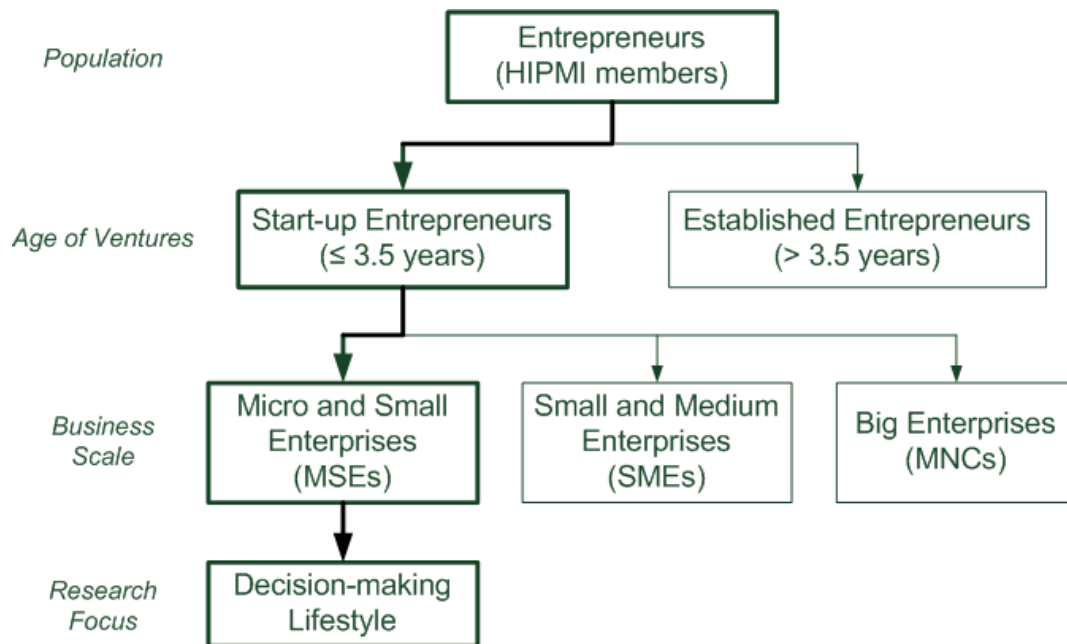


Figure 1.1: The research scope

1.7 Significance of the Research

The main practical significance of this research is that it will help SE including those in ICT make better business decisions in the early stages of their entrepreneurial activity by transforming an *ad-hoc* decision-making lifestyle into a lifestyle that is more consultative. The implementation of the decision-making transformation model is expected to enable the SE to make better quality decisions in multiple contexts. The success of MSE depends to a large extent on decision-making practices. Increasing the success rate of micro and small-scale SE is expected to increase the number of established businesses in the future, which will finally help economies overcome the global economic downturn.

This study is also significant to Information System research due to the utilization of Knowledge Management (KM), Human Virtual Intelligence (HVI), virtual collaboration through social network media, and supported by Information and Communication Technology to improve the SE decision-making practices. In the

decision-making process, KM plays an important role in optimizing the information search. The HVI concept is basically a Knowledge Management system based on the collaboration of knowledge agents. The use of crowdsourcing as a method of information gathering through social network media on the Internet is a new way to support entrepreneurial decision-making.

1.8 Structure of the Thesis

The thesis is organized in seven chapters. Chapter 1 introduces the research topic and formulates the research objectives, questions, scopes, significance, and thesis structure. Chapter 2 reviews the other works related to the topic. Chapter 3 describes the research design and methodology. Chapter 4 presents the data collection activities in the lifestyle study. Chapter 5 discusses the transformation model development, while Chapter 6 discusses the transformation model testing and validation. Chapter 7 provides the discussions, conclusions, contributions, and recommendations of this research. The thesis structure is shown in Figure 1.2.

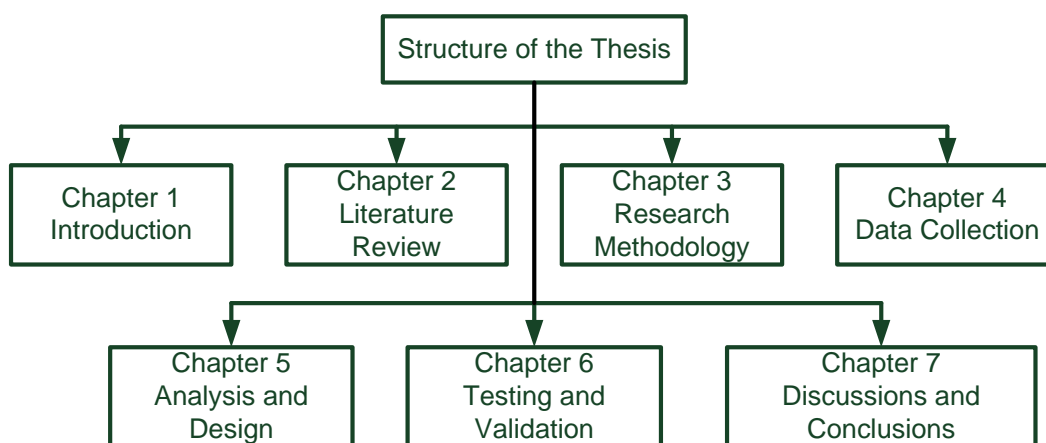


Figure 1.2: Structure of thesis

1.9 Chapter Summary

The background of this study was that the SE is very important to economic growth and job creation. Unfortunately, so many of them were failed in the beginning of their businesses. There are many factors of their failures, from individual factors such as lack of knowledge, skills and experiences, organizational factors such as the size and the age of ventures, and external factors such as lack of support system, the industry's rivalry and macro environment factors. While having so many constraints and limitations, SE were obligated to make quick and fast business decisions, as needed in competitive business environment. In this case, SE cannot be alone and rely solely on his own competency. They must consult relevant parties and various information systems to provide them as much as possible information to make more informed business decisions. An IS transformation model was proposed to improve SE's decision-making practices by transforming an *ad-hoc* decision-making lifestyle into a more consultative approach. Thus, the main research question is how to transform the *ad-hoc* decision-making lifestyle of a SE to become more consultative? The research question can be broken down further into the following sub-research questions: what is the current situation of SE's decision-making lifestyle, what kind of Information Systems model can be developed to transform the decision-making lifestyle and how can the transformation model be validated. In answering the research questions, the discussion has been limited into research scopes. The population observed was Indonesia Young Entrepreneur Association (HIPMI) in the South Sumatera region, the size and age of ventures were micro and small enterprise (MSE) with less than three-and-half years business existence and the focus was on SE decision-making lifestyle. This study is significant because it will help SE who have so many constraints and limitations to improve their entrepreneurial decision-making practices by utilizing IS model through the help of ICT, in order to increase the success rate of SE in the beginning of their business venture.

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