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Multi-layer agility: a proposed concept of business agility in organizational behavior perspective

Nopriadi Saputra[1], Endang Chumaidah[2], and Riza Aryanto[3]

[1]*Management Department, BINUS Business School, Bina Nusantara University, Indonesia*
[2]*Industrial Engineering, Telkom University, Indonesia*
[3]*PPM School of Management, Indonesia*

Abstract Turbulence in the business environment imposed large companies or market leaders to become more agile in doing business. Developing business agility can be implemented in many levels of business organization. This paper proposes a multi-layer perspective of business agility construct by examining construct validity through structural equation modelling. Based on organizational behavior theory, this paper proposes combining construct from three different perspectives of business agility: strategic agility from an organizational perspective, leadership agility from a group perspective, and learning agility from an individual perspective. The paper involved 477 supervisors and managers of Indonesian oil palm plantations as respondents. The data was analyzed by using Lisrel version 9.30. The result explains that the second-order construct is the best-fit construct for defining multi-layer agility as a measurement model.

Keywords business agility, strategic agility; leadership agility; learning agility

INTRODUCTION

Besides providing easiness to cooperate with various parties and offering many opportunities to innovate, the utilization of internet technology also increases the complexity of doing business. Internet technology brings the world into the Industry 4.0 era and makes the world increasingly volatile, uncertain, complex, and ambiguous (Bawany,2016; Mack & Khare,2015; Murthy & Murthy, 2014). Turbulence in the business environment affects business viability negatively (Glauner,2016). Therefore, every company is imposed to adapt quickly, even faster than the change itself. Large companies or market leaders are imposed to become more flexible and agile in doing business (Cannon & Elford, 2017; Evans, 2002; Heisterberg & Verma, 2014; Hugos, 2009; McCann, Selsky, & Lee, 2009).

McCann & Selsky (2012) explains that there are three types of business environment changes, namely: (1) episodic changes, (2) continuous changes, and (3) disruptive changes. Each type of change requires different dynamic capabilities. Episodic changes require organizational flexibility, continuous changes require organizational agility and disruptive changes require organizational resilience. This paper focuses the discussion on the business agility in dealing with continuous changes. There are many themes in various contexts related to business agility that previous researchers have discussed. The business agility themes in the organizational context are organizational agility (Crocitto & Youssef,2003), corporate agility (Brown & Agnew, 1982), strategic agility (Doz & Kosonen,2010), and enterprise agility (Tsourveloudis & Valavanis,2002). The business agility themes in functional context are agile supply chain (Charles, Lauras, & Wasenhove,2010), IT agility (Pfahl, 2014), HR agility (Gochman & Storfer,2014), manufacturing agility (Nagel & Dove, 1991), workforce agility (Breu, Hemingway, Strathern, & Bridger, 2001), marketing agility (Poolton, Ismail, Reid, & Arokiam, 2006), value chain agility (Swafford, Ghosh, & Murthy, 2006), value stream agility (Burgess, Hwarng, Shaw, & De Mattos, 2002), global risk agility (Wagner & Disparte, 2016), and sales force agility (Chonko & Jones, 2005). The business agility themes in the group context are team agility (McManus, 2003) and leadership agility (Joiner & Josephs, 2007). The business agility themes in individual context are learning agility (Lombardo & Eichinger, 2000) and culturally agile (Caligiuri, 2013).

This paper uses organizational behavior theory (OBT) as an approach (Robbins &

✉Correspondence to :
nopriadisaputra@gmail.com

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Judge, 2013; Schermerhorn, Hunt, Osborn, & Uhl-Bien, 2011). OBT explains that the effectiveness of groups or team determines the effectiveness of an organization within the organization. The individual effectiveness of group members determines the effectiveness of the group. Therefore, in elaborating business agility, this paper proposes a multi-layer perspective. Business agility as specific behavior in the business organization is viewed and defined into three different perspectives: (1) strategic agility as the agility in an organizational perspective; (2) leadership agility as the agility in a group perspective; and (3) learning agility as the business agility in an individual perspective. Combining these three different perspectives of business agility could offer the academician and practitioner a new construct to define, measure, and analyze business agility more comprehensively with multi-layer perspectives.

LITERATURE REVIEW

Strategic agility

The concept of strategic agility came from the recommendation of the Iacocca Institute (Lehigh University). This recommendation was for the United States government in the early 1990s to improve the competitiveness of the manufacturing industry by developing agile manufacturing (Nagel & Dove, 1991). Furthermore, agile manufacturing evolves into enterprise agility that integrates organizations, people, and technology throughout the enterprise to deal effectively with a highly competitive environment. The integration needs supporting infrastructure for production, market, people, and information (Tsourveloudis & Valavanis, 2002).

Based on previous research (Brueller, Carmeli, & Drori, 2014; Fourné, Jansen, & Mom, 2014; Junni, Sarala, Tarba, & Weber, 2015; Subhi Idris & AL-Rubaie, 2013); strategic agility is defined as “the ability of the organization to be flexible and fast in monitoring opportunities and capturing value through maximizing strength and reconfiguring the organization continuously in order to be sustainable for the long run.” Strategic agility is reflected into three dimensions: strategic sensitivity, leadership unity, and resource fluidity (Arbussa, Bikfalvi, & Marques, 2017; Doz & Kosonen, 2010).

Strategic sensitivity is reflected by the ability of top management for knowing the direction of future business quickly, experimenting with best management practice, and encouraging employees to master new skills. Leadership unity is reflected by the ability of top management to identifying the potential of employees quickly, recognizing employee support quickly, and maintaining the unity of direction. Resource fluidity is reflected by the ability of top management in anticipating resource requirements quickly, providing resources quickly, and solving the problem of the business unit quickly.

Leadership agility

Leadership agility is based on resource orchestration (Sirmon, Hitt, Ireland, & Gilbert, 2011) and leadership potential (Dries & Pepermans, 2012) as applied theory. The manager has a strategic role in managing diverse human resources in a highly changing environment. Based on previous studies (Horney, Pasmore, & O’Shea, 2010; Joiner, 2009; Joiner & Josephs, 2007; McKenzie & Aitken, 2012), learning agility is defined as the ability to lead a group of people flexibly and quickly in sensing and responding to business changes as well as the ability to unlearn and relearn about the relevant sources of success. Leadership agility is reflected into four dimensions: self-leadership agility, context-setting agility, stakeholder agility, and creativity agility (Joiner, 2009; Joiner & Josephs, 2007)

Self-leadership agility is reflected by the ability of direct superior for recognizing personal strength and weakness, developing the competence of the team continuously, and being a role model in self-development. Context-setting agility is reflected by the ability of direct superior for collecting information from various sources, taking the initiative quickly in complicated situations, and taking appropriately in an uncertain situation. Stakeholder agility is reflected by the ability of direct superior to recognize the interests of influential parties, building relationships with influential parties, and influencing others effectively. Creativity agility is reflected in the ability of direct superior for providing direction quickly,

encouraging the team to search the creative solution, and being dared to decide.

Learning agility

Learning agility is believed as the construct for predicting current performance, future potential, and adaptability to a vibrant, dynamic environment (Bedford, 2011; Connolly, 2001; De Meuse, Dai, Hallenbeck, & Tang, 2008). Learning agility indicates the individual's ability to adapt the relevant lesson learned from the experience into different and more complex contexts (Allen, 2016). Based on Lombardo & Eichinger (2000) and concern from DeRue, Ashford, & Myers (2012) to differentiate learning agility from learning ability, this paper defined learning agility as the individual's ability to be flexible and fast leveraging experience to cope with complicated new situations. Learning agility is reflected into four dimensions: change agility, mental agility, people agility, and result agility (Gravett & Caldwell, 2016).

Change agility is reflected by the personal ability for making the personal experience the learning opportunity, for leasing personal achievement within external obstacles and making workload a challenge. Mental agility is reflected by the personal ability for learning from mistakes quickly, having own style of learning, and enjoying difficulty at work. The result ability reflects individual agility for keeping logical in dealing with a complicated problem, keeping the spirit high in solving the long process of solving a problem, and solving the problem without guidance and support from the others. The people ability reflects people agility for being happy to work with various people, learning from others quickly, and being asked for help by others (PA03). To sum up, appendix A represents the dimensions, indicators, and code for strategic agility, leadership agility, and learning agility.

METHODS

Supervisors and estate managers of Indonesia palm oil plantations are the respondents of this study. We estimate about 16,000 supervisors and managers as the population. This paper used cluster stratified proportional random sampling for collecting data. Most of Indonesia palm oil plantation (95.8%) are in Borneo and Sumatra, the sample was divided into two clusters - Sumatra and Borneo. The sample was stratified proportionally based on structural positions and clusters. Data collection is pick up randomly based on the list of GAPKI members. The expected sample size was 376 (Krejcie & Morgan, 1970).

This data has collected from 491 respondents, but 14 respondents did not give responses completely. Finally, the analysis of this paper based on 477 respondents. The profile of respondents is dominated by men (85%); born between 1980 to 1999 (79%); less five year of work experience in palm oil plantation (51%); with bachelor's degree as educational background (71%); come from non-farming family (80%), and as team leader or supervisor in the organization (60%).

Covariance Based SEM approach by utilizing Lisrel version 9.30 was used for data analysis. CB-SEM has robust estimation and is more relevant for confirmatory research than Variance-Based SEM (Hair, Hult, Ringle, & Sarstedt, 2014). SEM has two main steps: (1) measurement model analysis and (2) structural model analysis. For examining construct validity, this paper utilized confirmatory factor analysis (CFA) of measurement model for evaluating validity of items, reliability of dimension, and goodness of fit of the measurement model. Validity of items are indicated by SFL > 0.5 (standardized factor loading). Reliability of dimension is indicated by CR more than 0.7 (construct reliability) or VE more than 0.5 (variance extracted). The goodness of fit analysis of the model is indicated by p-value, RMSEA, NFI, NNFI, CFI, RFI, IFI, Standardized RMR, GFI, and AGFI. CFA is conducted on first, second and third order construct of multi-layer agility.

This paper conducted analysis of construct validity by on comparing analysis of measurement model of multi-layer agility in the different constructs: first, second, and third order construct. From three different construct, this paper decided which construct is the best-fit one.

RESULTS AND DISCUSSION

First order construct

First order construct is a construct which is directly reflected into the items or indicators. First order construct of multi-layer agility is

Table 1.
Validity & reliability test for second order construct

Variable / item	SFL > 0,5	CR > 0,7	VE > 0,5	Result
Strategic Agility		0,87	**0,44**	Reliable
SS01	0,61			Valid
SS02	0,60			Valid
SS03	0,67			Valid
LU01	0,78			Valid
LU02	0,79			Valid
LU03	0,76			Valid
RF01	0,64			Valid
RF02	0,54			Valid
RF03	0,52			Valid
Leadership Agility		0,94	0,57	Reliable
XA01	0,59			Valid
XA02	0,82			Valid
XA03	0,83			Valid
HA01	0,78			Valid
HA02	0,77			Valid
HA03	0,81			Valid
VA01	0,82			Valid
VA02	0,82			Valid

Variable / item	SFL > 0,5	CR > 0,7	VE > 0,5	Result
Leadership Agility		0,94	0,57	Reliable
VA03	0,58			Valid
FA01	0,71			Valid
FA02	0,73			Valid
FA03	0,79			Valid
Learning Agility		0,87	**0,37**	Reliable
CA01	0,51			Valid
CA02	0,63			Valid
CA03	0,62			Valid
MA01	0,61			Valid
MA02	0,62			Valid
MA03	0,65			Valid
PA01	0,63			Valid
PA02	0,69			Valid
PA03	0,54			Valid
RA01	0,68			Valid
RA02	0,55			Valid
RA03	0,53			Valid

shown in appendix B. The multi-layer agility is directly reflected into 33 items or indicators. Standardized factor loading of all items in learning agility (CA01, CA02, CA02, MA01, MA02, MA03, PA01, PA02, PA03, RA01, RA02, RA03) and several items in strategic agility (SS01, SS02, RF01, RF02, RF03) are lower than 0.5. It indicates that all items in learning agility and several items in strategic agility are not valid and these items were excluded from measurement model. The model becomes incomplete and does not reflect an integrated model of business agility in individual, group, and organization anymore. The first order construct of multi agility is not valid for measurement model of multi-layer agility.

Second order construct

The second order construct is a construct which the variable is reflected into dimensions and then the dimension is reflected into the items. The second order construct of multi-layer agility is shown in appendix C. The multi-layer agility is reflected into three dimensions: strategic agility, learning agility and strategic agility. All items have SFL score more than 0.5. it means that all items of all dimensions are valid as the indicators.

The analysis of reliability is shown in table 1. Construct validity (CR) of all dimensions is more than 0.7. Strategic agility, leadership agility, and learning agility are reliable as the dimensions of model. The second order construct is the model with valid items, reliable dimensions, and good fit model with RMSEA = 0.064 or less than 0.08.

Third order construct

The third order construct is a construct which variables is defined into dimensions, then dimension is reflected into sub-dimensions and finally the sub-dimension is explained by the items or indicators. The third order construct of multi-layer agility is shown in appendix D. The multi-layer agility is reflected into three dimensions: strategic agility, learning agility and strategic agility. Strategic agility is reflected by three sub-dimensions: strategic sensitivity, leadership unity, and resource fluidity. Leadership agility is reflected by four dimensions: self-leadership agility, context-setting agility, stakeholder agility, and creativity agility. Learning agility is reflected by four sub-dimensions: change agility, mental agility, people agility, and result agility. Each of sub-dimension is reflected by three items or indicators.

Analysis of validity and reliability is shown on table 2. Standardized factor loading of all items are more than 0.5. All items are valid as the indicator or items. All sub-dimensions of strategic agility and leadership agility are

Table 2.
Validity & reliability test for third order construct

Dimension/item	SFL > 0,5	CR > 0,7	VE > 0,5	Result
Strategic Agility (STRAG)				
Strategic Sensing (STS)		0,77	0,53	Reliable
SS01	0,72			Valid
SS02	0,73			Valid
SS03	0,73			Valid
Leadership Unity (LEU)		0,85	0,65	Reliable
LU01	0,81			Valid
LU02	0,83			Valid
LU03	0,78			Valid
Resource Fluidity (REF)		0,75	0,51	Reliable
RF01	0,74			Valid
RF02	0,68			Valid
RF03	0,69			Valid
Leadership Agility (LDAG)				
Context Setting Agility (XAG)		0,85	0,66	Reliable
XA01	0,62			Valid
XA02	0,89			Valid
XA03	0,91			Valid
Stake-Holder Agility (HAG)		0,87	0,69	Reliable
HA01	0,82			Valid
HA02	0,83			Valid
HA03	0,84			Valid
Creativity Agility (VAG)		0,81	0,58	Reliable
VA01	0,83			Valid
VA02	0,83			Valid
VA03	0,59			Valid

Dimension/item	SFL > 0,5	CR > 0,7	VE > 0,5	Result
Leadership Agility (LDAG)				
Self-Leadership Agility (FAG)		0,83	0,63	Reliable
FA01	0,74			Valid
FA02	0,77			Valid
FA03	0,84			Valid
Learning Agility (LRAG)				
Change Agility (CAG)		**0,67**	**0,41**	Not Reliable
CA01	0,51			Valid
CA02	0,71			Valid
CA03	0,68			Valid
Mental Agility (MAG)		0,72	**0,46**	Reliable
MA01	0,65			Valid
MA02	0,71			Valid
MA03	0,69			Valid
People Agility (PAG)		**0,69**	**0,43**	Not Reliable
PA01	0,66			Valid
PA02	0,74			Valid
PA03	0,55			Valid
Result Agility (RAG)		**0,62**	**0,36**	Not Reliable
RA01	0,72			Valid
RA02	0,52			Valid
RA03	0,53			Valid

Table 3.
Goodness of fit analysis

No.	GOFI	Standard	Second order		Third order	
			Score	Result	Score	Result
1	p-Value	p-Value > 0,050	0,000	Not	0,000	Not
2	RMSEA	RMSEA ≤ 0,080	0,065	Good Fit	0,046	Good Fit
3	NFI	NFI ≥ 0,900	0,873	Not	0,908	Good Fit
4	NNFI	NNFI ≥ 0,900	0,922	Good Fit	0,959	Good Fit
5	CFI	CFI ≥ 0,900	0,927	Good Fit	0,962	Good Fit
6	IFI	IFI ≥ 0,900	0,927	Good Fit	0,963	Good Fit
7	RFI	RFI ≥ 0,900	0,865	Not	0,899	Good Fit
	Standardized	Standardized RMR				
8	RMR	< 0,050	0,059	Not	0,054	Not
9	GFI	GFI ≥ 0,900	0,811	Not	0,871	Not
10	AGFI	AGFI > 0,900	0,705	Not	0,849	Not

reliable. But only mental agility (MAG) is reliable. Three dimensions of learning agility – change agility (CAG), people agility (PAG), and result agility (RAG) are not reliable. The third order construct of multi-layer agility is not good model, because not all dimensions are reliable. The goodness of fit analysis of second and third construct is shown in table

3. The third order construct has five indexes – RMSEA, NFI, NNFI, CFI, and IFI – that indicate good fit. The second order construct has four indexes – RMSEA, NNFI, CFI, and IFI that indicate good fit. Based on goodness of fit analysis, the third order is better than the second one. Although third order construct has better goodness of fit than second order, but third order construct has some dimensions which is not reliable. Therefore, second order construct is considered better as a measurement model because it has valid items, a reliable dimension and a good fit model.

CONCLUSION

For being able to adapt quickly, even faster than the change itself, the companies in Indonesia palm oil plantation should develop agility in whole layer of organization. Multi-layer agility provides the concept of integrated agility in individual, group, and organizational perspective. For measuring the multi-layer agility in organization, this paper recommends second order construct. It means that multi-layer agility is reflected into strategic agility, leadership agility, and learning agility and then all dimensions are reflected into its items.

The second order construct is best-fit construct for defining, measuring, and analyzing multi-layer agility; because all items are valid, all dimensions are reliable, and the model has enough goodness of fit.

For further research on construct validity of multi-layer agility, this paper recommends to utilize Rasch Model or Item Response Theory which provide better analysis for the items of the proposed variable.

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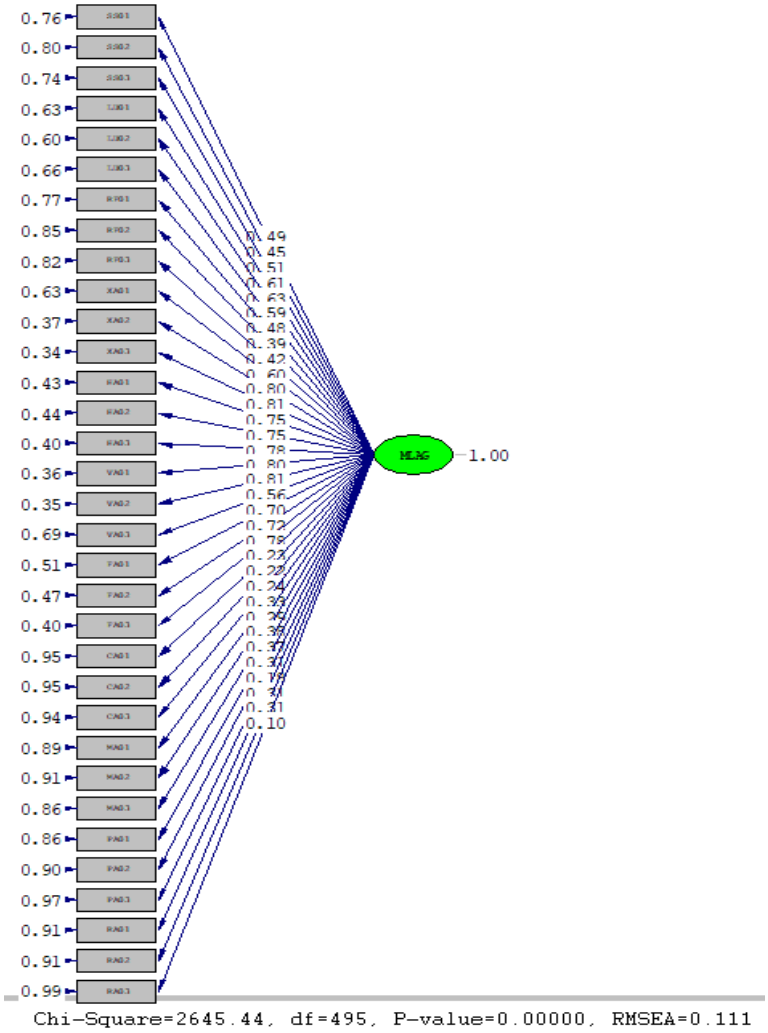
Appendix A.
Dimensions, indicators, and code for strategic, leadership, and learning agility

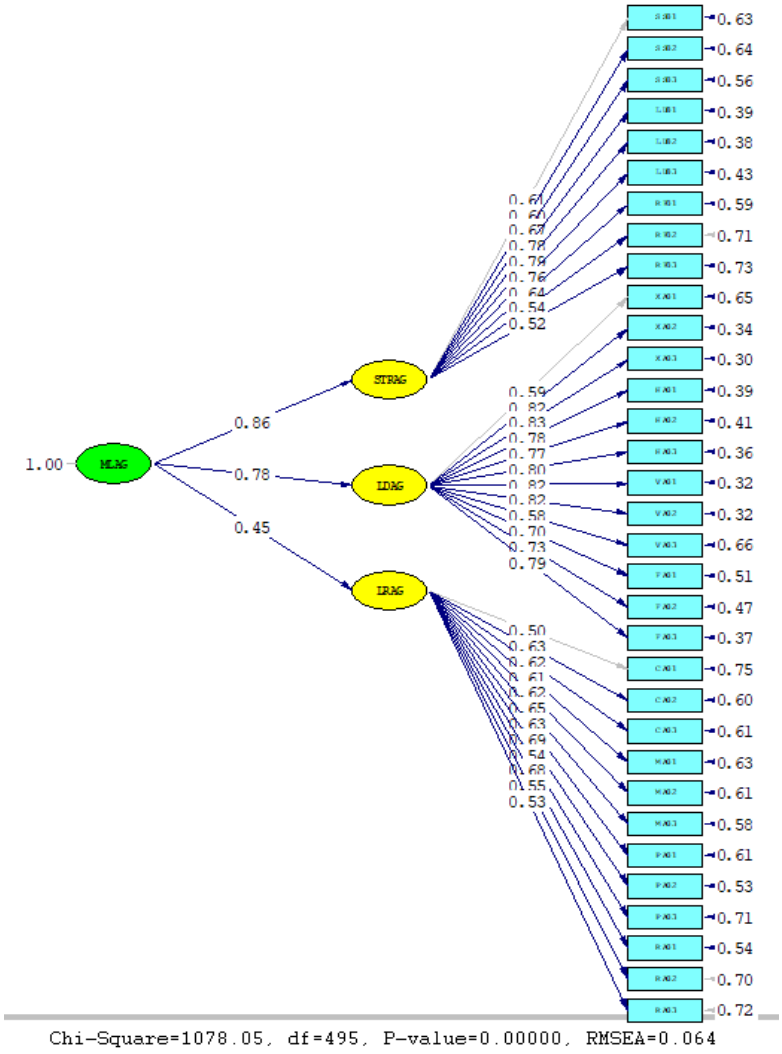
Dimension	Indicators	Code
Strategic Agility		
Strategic sensitivy	The ability of top management for knowing the direction of future business quickly	SS01
	The ability of top management for experimenting with best management practice	SS02
	The ability of top management for encouraging employees to master new skills	SS03
Leadership unity	The ability of top management to identifying the potential of employees quickly	LU01
	The ability of top management to recognizing employee support quickly	LU02
	The ability of top management to maintaining the unity of direction	LU03
Resource fluidity	The ability of top management in anticipating resource requirements quickly	RF01
	The ability of top management in providing resources quickly	RF02
	The ability of top management in solving the problem of the business unit quickly	RF03
Leadership agility		
Context-setting agility	The ability of direct superior for collecting information from various sources	XA01
	The ability of direct superior for taking the initiative quickly in complicated situations	XA02
	The ability of direct superior for taking appropriately in an uncertain situation	XA03
Stakeholder agility	The ability of direct superior to recognize the interests of influential parties	HA01
	The ability of direct superior to building relationships with influential parties	HA02
	The ability of direct superior to influencing others effectively	HA03
Creativity agility	The ability of direct superior for providing direction quickly	VA01
	The ability of direct superior for encouraging the team to search the creative solution	VA02
	The ability of direct superior for being dared to decide	VA03

Dimension	Indicators	Code
Leadership Agility		
Self-leadership agility	The ability of direct superior for recognizing personal strength and weakness	FA01
	The ability of direct superior for developing the competence of the team continuously	FA02
	The ability of direct superior for being a role model in self-development	FA03
Learning agility		
Change agility	The individual ability for making the personal experience the learning opportunity	CA01
	The individual ability for for leasing personal achievement within external obstacles	CA02
	The individual ability for making workload a challenge	CA03
Mental agility	The individual ability for learning from mistakes quickly	MA01
	The individual ability for having own style of learning	MA02
	The individual ability for enjoying difficulty at work	MA03
People agility	The individual agility for being happy to work with various people	PA01
	The individual agility for learning from others quickly	PA02
	The individual agility for being asked for help by others	PA03
Result agility	The individual agility for keeping logical in dealing with a complicated problem	RA01
	The individual agility for keeping the spirit high in solving the long process of solving a problem	RA02
	The individual agility for solving the problem without guidance and support from the others	RA03

Appendix B.
First order construct of multi-layer agility



Appendix C.
Second order construct of multi-layer agility



Appendix D.
Third order construct of multi-layer agility