Developing global logistics competencies for the undergraduates.

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Abstract: This research aimed to develop global logistics competencies for the undergraduate students in view of the academic from public and private universities and the practitioners from world top 50 logistics service providers in Thailand. Each competency; knowledge, skill and attribute are consisted of 4 global logistics competencies groups that are generic personal, logistics career, organizational industry and behavior competencies. The study revealed that both parties showed similar required logistics global competencies that need to be developed for the students. For knowledge, logistics career, organizational industry and behavior competencies elements for example quality& customer management, global management, contract management were weighed and selected. For skills, only generic personal and organizational industry competencies elements for example leadership skill, systematic work, technical and goal setting were weighed and selected, For attributes, generic personal, logistics career and organizational industry competencies elements for example continuous learning, personal integrity, adaptability, strategic focus were weighed and selected. The competencies development model was constructed with these selected competencies elements.

Keywords: Logistics global competencies (GLC), development, undergraduates

1.Introduction

Competency involves the ability to meet complex demands by drawing on and mobilizing psychosocial resources (including skills and attitudes) in particular contexts (OECD, 2005). Competencies are the abilities or capability of the human to facilitate his knowledge, skills and attitudes (KSA) in order to express their competence in doing things effectively and successfully. Competency is the capability to apply or use the set of related knowledge, skills, and abilities

required to successfully perform 'critical work functions' or tasks in a defined work setting (www.wa.gov.au, 2019).

Payne (2000) showed that characteristics, behaviors and attitudes formed by the historical multidimensional development of one personal abilities. While Maqsood et.al. (2003) identified that knowledge, skills and attributes are considered the key of learning achievement. Also Green (2011) defined a skill as a person's ability to perform a task as the knowledge needed to perform a broader range of activities.

A new kind of graduate in the globalization of the 21st century is reshaped to understand the economics, security, cultural identity, citizenship and environmental awareness and communicate in various context of multicultural societies. They will need to be more adaptive and aware of world situations and global issues in various diverse perspectives, able to communicate across cultures and in other languages. Thus there's a vigorous call for a more powerful and relevant learning in response to these new demands and opportunities (Gardner, 2007, Reimers, 2009, Stewart, 2007). Confirmed by Boix-Mansilla and Jackson (2011) that students must know how to investigate the world, weigh perspectives, communicate ideas, take action, and apply expertise in order to prosper in a global, multicultural workforce.

AEISEC (2016), a non-profit organization aiming to develop the youth potential around the world mentioned the global competencies that are necessary in 5 dimensions; Global Mindset, Entrepreneurial Outlook, Social Responsibility, Emotional Intelligence and Proactive Learning. The program of development will help the employers who looking for the young and competent candidates surviving in job recruitment.

Over the recent decades logistics discipline has changed very fast. Competencies in knowledge and skills are needed in different logistics functions (Discharger et al., 2006; Mangan & Christopher, 2005; Murphy & Poist, 2007). Though the World Bank survey (2017), focused that the occurrence of low supply on qualified logistics-related labor across the logistics sector is perceived on all levels in both developed and developing countries and the logistics workers faced the suffering of low prestige in social status. A higher requirement to upgrade the logistics education has consequently developed by changing and improving the curriculum, course program and teaching deliveries rapidly (Van Hoek, 2001).

One of the most critical close-look is relative lack of appropriate levels of logistics competence according to the World Bank Logistics Performance Index (2018) that aim to help benchmark the countries to identify the challenges and opportunities in the logistics competencies across the 160 countries. One of the critical factors for the capable performance is the lack of competent labor. The developing countries need the manager level while the developed countries need blue collar workers.

The main role of higher education institutions (HEIs) is producing graduates for employability that help the business sector and bring the prosperity economics to the nations in this emerging knowledgeable economy (Castree, 2011; Arrowsmith, et al., 2011; Erickson, 2012). Graduate competencies are a framework of knowledge, skills and attitudes that graduates should develop before starting their career lives.

In this study, the global logistics competencies development for the undergraduate students to be more qualified and rigid competent to fit in the global logistics requirements would be helpful not only logistics instructors to leverage the better instructional deliveries but also for students to plan and prepare for their future logistics career paths.

2. Objects and the scope of the study

The basic purpose of this research was to explore the perspective of the academics and the practitioners on the current existing characteristics of global logistics competencies in academic and business sectors and the required global logistics competencies which needed for the undergraduate students development. The study was conducted within Bangkok by the questionnaire distributed to the targeted academics and practitioners.

3. Literature Review

Studies regarding logistics competencies are much attentive in the logistics literature. Richard Boyatzis developed and refined from David McClelland's research (1973) showing that the competencies as the underlying characteristics i.e. traits, motive, skill, person's self-image, body of knowledge and person's social role that result in effective job with superior performance.

By the beginning of 21st century, Mangan, Gregory and Lalwani's study (2001) and Gammelgaard and Larson's study (2001) identified the most important supply chain skills in the future as communications/negotiations, computers/IT and the critical skills for supply chain as written and oral communication, problem-solving, decision-making, teamwork, ability to see big picture, prioritizing and supply chain awareness, and cross-functional awareness.

Stankeviciene and Lobanova (2006) emphasized that person's activities are evaluated by four competencies:

Personal competence – meaning the level of applying one's capabilities including knowledge and employee's personal characteristics;

Professional competence – meaning that one can use their knowledge, skills and experiences in doing specific area of job perfectly;

Social competence – meaning the ability to communicate with others effectively;

Management competence – meaning the assurance of one's area of work and organization's results.

Harrison and Van Hoek (2008) studied that the social and environmental consequence of supply chain operations needed corporate social responsibility to deal with. Viewed and concluded by Kisperska-Moron (2010) that in future highly educated personnel in supply chain are much required. The skills in operational level such as high expectation of customer service level, good command of communications skills for efficient coordination; good skills in fully automated information system; critical analysis; adaptability to changing requirements; and an innovative and open mind.

Thai, Cahoon and Tran (2011) studied and supported Murphy and Poist (2006) that the integration of KSA of the logisticians has to be broader not only in transportation, warehousing, inventory management, problem-solving ability, ability to plan, cost control but also knowledge enhancement in risk management, strategic management, software and computerization, cross-firm relationship management, globalization, environmental sustainable logistics systems, climate change and personal integrity. Those of KSA will be more important and highly required for the competence logisticians

Sodhi and Son (2008) identified that what employers expected from graduates were professional knowledge as well as human skills such as leadership, communication and project management. As confirmed by Bourlakis et al. (2013) analyzed and illustrated that leadership, communication were focused by employers.

Wu & Yuan (2011) found the similar agreement of the 2 parties both the practitioners and the academics that the indispensable skills for logistics personnel were international perspective,

language ability, communication skills, risk management and market profitability, information integration and decision making ability under pressure.

APICS, the leading professional association for supply chain and operations management viewed the 3 competencies;

- Foundation Competencies- meaning the personal attribute competencies such as the needs of others awareness, personal integrity, continuous self-learning; academic competencies i.e. reading and writing for comprehension, supply chain fundamentals; workplace and leadership competencies i.e. teamwork, problem-solving, conflict management, enabling technology;

- Professional-Related Competencies – meaning that knowledge in supply chain and technical competencies in operation management such as warehouse management, transportation management, risk management.

- Occupational – related Competencies which includes working experiences.

Confirmed by Razzaque and Sirat (2001) that the focus on the skills and attributes that make a good logistician had been rather scant. Stated by other researches that logistics professionals must be multi-talented across a range of management skills as well as having the depth of logistics knowledge and abilities, which means they must have both generalist and specialist knowledge and skills (Gammelgaard & Larson, 2001; Razaque & Sirat, 2001; Murphy & Poist, 2006).

In Barloworld Logistics' Supply Chain foresight 2012 report, it indicated that one of the top five constraints in South Africa was skill shortage. While Waller (2012) emphasized that in supply chain there were shortage of people with the right skills to suit their functional operations.

4. Methodology

Most of the methodologies in logistics competencies studies have been based on surveys, interviews, and case studies (Gammelgaard and Larson, 2001; Mangan, J. & Christopher, M., 2005; Poist, et al., 2001). This research aims to examine the global logistics competencies; knowledge, skills and attributes that each competency consisted of 4 minor competencies 1) Generic personal competencies 2) Logistics career competencies 3) Organizational Industry competencies and 4) Behavior competencies that needed for the undergraduates competencies development. The data collection involved the random process of two population groups: one for academics which comprised of 30 specialized academics in logistics who have 3-5 years in teaching logistics and supply chain from public and private universities while the latter comprised of 50 practitioners who have 5 years minimum in logistics and supply chain and work with world top 50 logistics service providers in Bangkok. The data collection process was carried during which a self-administered online questionnaire was sent to the targeted samples by email. Follow up emails and phone calls were made every week. The questionnaire consisted of 2 parts: part A focused on collecting the demographic data of the respondents, while part B listed the 111 elements of currently perceived and required global logistics competencies. Fig 1 shows all 111 global logistics competencies.

Global Logistics Competencies

Knowledge	Skill	Attribute
•Supply chain management	•Warehousing skill	•Self-discipline/Self-awareness
•Transport law and regulation	•Transportation planning and monitoring, good skills	•Flexible
•Vehicle routing	•Logistics planning skill	•Accountability and responsibility
•Optimization	•Customer orientation skill	•Motivated/ enthusiastic
•Containerization	•Loading and unloading ability	•Conscientious
•Transportation & terminal	•Negotiation skill	•Punctual
•Port Management	•Conducting standard logistics tasks	•Self-confident
•Maritime transport	•Ability to complete complex logistics tasks	•Initiative
•Air transport	•Cost control skill	•Firmness
•Green logistics issues	•Service quality improvement ability	•Intelligent
•Inventory management	•Consolidating, quality inspection	•Personal integrity
•Storage and warehousing	•Logistics awareness skill	•Rational
•Packaging	•Customs practices	•Persistent
•Manufacturing	•Interdisciplinary skill	•Loyalty
•Waste management	•Time management skill	•Adaptability
•Pallet management	•Approaching problem skill	•Ability to see big picture
•Sourcing & supplier management	•Analytical skill	•Continuous Learning
•Strategic relationship management with suppliers	•EQ management skill	•Value added perspective
•INCO TERMS	•Identifying priorities	•Dynamic
•Customs Procedures	•Problem solving skill	•Independency, social and civic
•Export & Import	•Innovative skill	•Cultivated Appearance
•Integrated system and collaboration	•Analyzing and assessing service	•Business Ethic
•Risk management	•Intellectual skill	•Awareness of the need of others
•Supplier cost reduction	•Ethical skill	•Global/social awareness
•Economic and finance, legal	•Team work skill	•Appreciating diversity
•International logistics and business	•Strategic focus skill	•Positive mindset & behavior
•Health safety and security	•Leadership skill	•Cultural awareness and expression
•Logistics industry	•Decision making skill	
•SOP (Standard Operation Procedure)	•Change management skill	
•Industrial relations	•Cross-functional coordination skill	
•Quality and customer management	•Conflict management skill	
•General business management	•Business process improvement skill	
•CSR	•Operational skill	
•Contract Management	•Project management skill	
•Global management	•Data mining skill	
•Impact of globalization	•Entrepreneurship skill	
•Knowledge of goods	•Basic business skill	
	•Technical skills, goal-setting and execution	
	•Find the best operating level skill	
	•Determine the success or failure rate of business using •financial accounting	
	•Systematic work skill	
	•Commercial awareness skill	
	•Verbal and written communication	
	•Language skills (English + one more language)	
	•Manage relationship in diverse Contexts	
	•Technology skills	
	•Information integration system& process integration	

Fig 1 Logistics Global Competencies

The respondents were asked to rate the currently perceived global competencies and the required logistics competencies consisting of 38 knowledge competencies; 47 skills competencies; 26 attributes competencies (Fig 2) on a ten-point scale in term of the perception and awareness levels from minimum (0) to the maximum (10). A pilot test was conducted of 15 academics and 15 practitioners. Feedback of the answer was used in revising the questionnaire. All 80 questionnaires from the respondents were received.
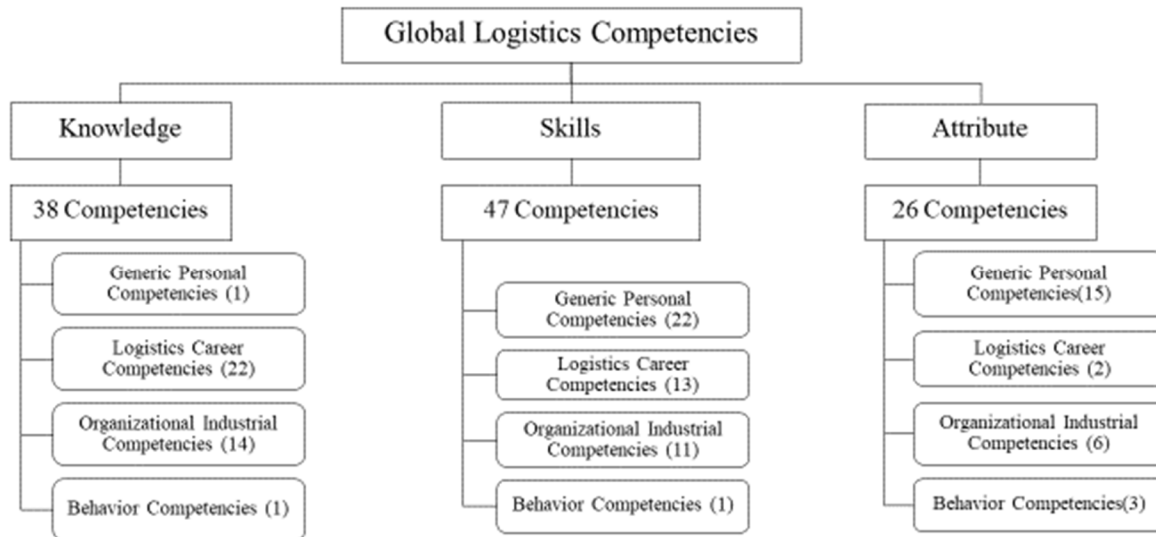

Fig 2. Composition of global logistics competencies

5. Research Results

The results showed the responding academics who have logistics teaching experience 3-5 years were masters' degree and PhD holders between 30 and 50 years up of age from government and private universities. The practitioners who have logistics and supply chain experience 5 years up from world top 50 logistics service providers based in Bangkok were 30-50 years of age.

Table 1 shows the global logistics competencies comparison mean score result of the currently perceived and the required competencies of the academics and the practitioner g respondents. The result shows the mean score of the required GLC are higher than the current score that reflects global logistics competencies are highly enhanced for student development.

Table 1 Comparison of current and required GLC

Global Logistics Competencies	Academics		Practitioners		R	Sig (2-tailed)
	Current	Required	Current	Required		
Knowledge						
Generic Personal	5.77	8.07	6.45	7.73	0.406	0.501
Logistics Career	5.78	8.33	5.93	8.01	0.126	0.623
Organizational Industry	5.43	7.99	5.64	7.72	0.032	0.701
Behavior	5.47	8.23	6.38	8.15	0.032	0.701
Skills						
Generic Personal	5.45	8.60	6.01	7.96	0.271	0.513
Logistics Career	5.38	8.10	5.98	7.73	0.104	0.165
Organizational Industry	5.08	8.03	6.02	7.65	0.126	0.045*
Behavior	5.30	8.23	6.41	7.89	0.395	0.455
Attributes						
Generic Personal	5.51	8.34	6.17	7.71	0.255	0.146
Logistics Career	5.54	8.40	6.62	8.16	0.325	0.299
Organizational Industry	5.39	8.20	6.20	7.71	0.414	0.051
Behavior	5.36	8.32	6.15	7.84	0.251	0.092

$p<0.05$

In order to find out any significant difference between the two groups, a series of *t* tests at 95 percent confidence level were performed to examine. There is one finding derived from Table 1 that both respondent groups viewed organizational industry competencies which composed with various elements like technical skills, goal setting and execution, finding the best operating level skill, determining the success or failure, rating of a business using financial, accounting, systematic work, business process improvement, commercial awareness, entrepreneurial skill so essential for current perception and required global logistics competencies.

Table 2 provides the summary of the required GLC of the two respondents groups, in order to find out any significant difference between the two groups, a series of *t* tests at 95 percent confidence level were performed to examine the data.

Table 2 Required GLC in comparison of the two groups

Required Global Logistics Competencies of the students	Academics		Practitioners		R	Sig (2-tailed)
	$(\bar{x})$	S.D.	$(\bar{x})$	S.D.		
Knowledge						
Generic Personal	8.07	1.70	7.73	1.34	0.342	0.421
Logistics Career	8.33	1.75	8.01	1.92	0.263	0.181
Organizational Industry	7.99	2.07	7.72	1.90	0.267	0.465
Behavior	8.23	1.25	8.15	1.41	0.243	0.652
Skills						
Generic Personal	8.60	1.14	7.96	2.04	0.294	0.461
Logistics Career	8.10	1.63	7.73	1.85	0.206	0.330
Organizational Industry	8.03	1.92	7.65	1.85	0.215	0.329
Behavior	8.23	1.14	7.89	1.50	0.264	0.372
Attributes						
Generic Personal	8.34	1.99	7.71	1.93	0.417	0.111
Logistics Career	8.40	1.28	8.16	1.56	0.401	0.253
Organizational Industry	8.20	1.95	7.71	1.99	0.543	0.129
Behavior	8.32	2.08	7.84	2.00	0.328	0.219

*p<0.05

There is no significant finding derived from Table. 2. The gap of mean score of the required GLC shown in Fig 3 reflects that the academics prefer all global logistics competencies to be more developed than the practitioners.
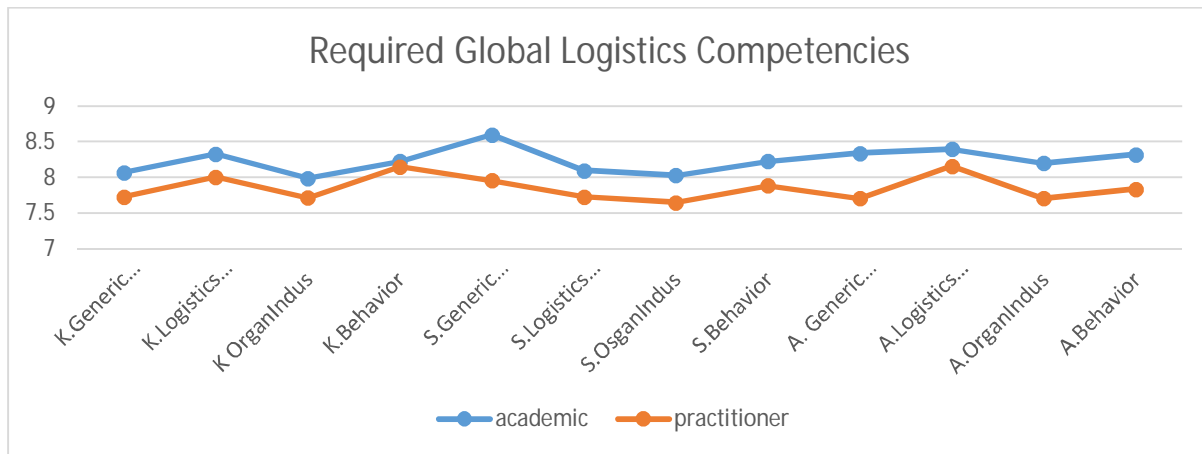
Fig. 3 Gap of the   required GLC of the two group respondents

In order to get the most weight of the competencies elements for development, further step to look closely in each element of competencies. The extraction method Principal Component Analysis (PCA) was selected.

Hair et al. (2009) required that each item is considered a satisfactory item when item loadings are greater than 0.70. Many studies reported that when analyzed with PCA, the loading greater than 0.5 should be used for the effective and better results (Truong & McColl, 2011), whereas in tourism context Chen & Tsai (2007) were also considered 0.5 as a cut-off for acceptable loadings. Additionally, while Ertz, Karakas & Sarigollu (2016) have considered the factor loadings of 0.4 and above for their confirmatory factor analysis for consumer behavior in their marketing research. So, of the above conditions, in this study factor loading cut-offs for the best competencies selection criterion reaching up to 0.8-0.9 of each competency.

Table 3 shows the summary of the selected elements of global logistics competencies for development comparing between the academics and practitioners. There are similar selected elements of knowledge competencies for example quality and customer management.   For skills competencies, both groups gave different selected elements, the academics focused on leadership skill and technical skills, goal-setting and execution while the practitioners focused on systematic work. For attributes, there are few similar selected elements for example rational, personal integrity, accountability and responsibility, motivated and enthusiastic. The rest are adaptability, strategic

focus, cultivated appearance and independency, social and civic.

Table 3 Competencies elements selected by the two groups

Academics		Factor Loading	Practitioners		Factor Loading
Knowledge			**Knowledge**		
Organizational Industry	Global Management	0.95	Logistics Career	Pallet Management	0.84
				Import Export	0.80
				Customs Practices	0.80
			Organizational Industry	Quality and customer Management	0.81
	Contract Management	0.92	Behavior	Cultural awareness and expression	0.88
	Quality and customer Management	0.91			
Skills			**Skills**		
Generic Personal	Leadership	0.93	Organizational Industry	Systematic work	0.93
Organizational Industry	Technical skills, goal-setting and execution	0.92			
Attributes			**Attributes**		
Generic Personal	Rational	0.96	Generic Personal	Personal Integrity	0.94
	Motivated/Enthusiastic	0.95		Rational	0.93
	Personal Integrity	0.94		Motivated/Enthusiastic	0.93
	Flexible	0.92		Conscientious	0.95
	Persistent	0.92		Continuous learning	0.94
	Accountability& Responsibility	0.91		Punctual	0.95
				Self-confident	0.92
Organizational Industry	Strategic Focus skills	0.91		Firmness	0.92
			Logistics Career	Adaptability	0.92
			Organizational Industry	Cultivated Appearance	0.92
				Independency, social and civic	0.92

6. Conclusions

This research aims to explore the required global logistics competencies for the undergraduate development. The research provides an important hint that except generic personal competencies, knowledge elements in logistics career, organizational industry, and behavior competencies like quality and customer management, global management, cultural awareness & expression are very important. While skills elements in generic personal and organizational industry competencies like leadership, systematic work, technical skills, goal-setting and execution are very important. And attributes elements in generic personal, logistics career and organizational industry except behavior competencies like continuous learning motivated/enthusiastic, personal integrity, continuous learning are important for enhancing global logistics competencies. Then 25 global logistics competencies elements were selected for model development.

7. Discussion & Recommendation

The result of GLC element findings can be applied to logistics curricula amendment in order to enhance and fulfill global logistics competencies for the students. However, the way to adapt these competencies elements to learning deliveries should be done proactively in various method to achieve the competencies development because humans can develop their competencies by changing behavior, mood and self-image. The students in this new era have to adapt themselves to the multicultural world by investigating, weighing perspectives, communicating ideas and taking action and gain expertise during their study in universities confirmed by Boix-Mansilla & Jackson (2011). Therefore the GLC development model can be founded in Fig 4.
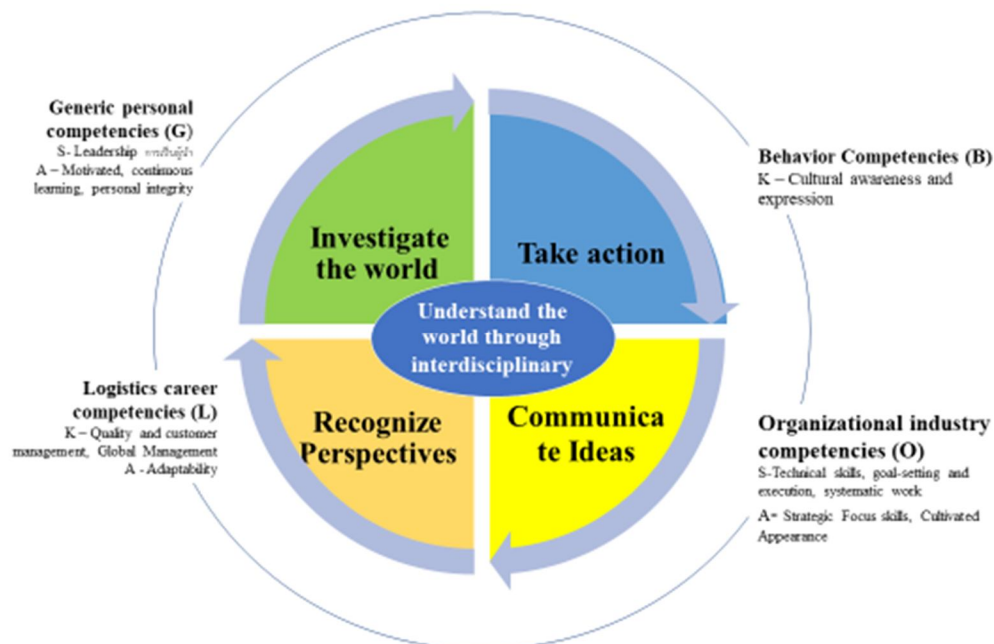

Fig 4 GLC Development GLOB Model

To maintain their existence perfectly and sustainably, they may need improvements of the desirable behavior that lead to outstanding performance. Boyatzis et.al (2002) research showed the improvement lasted for years in the prolonged study at the Weatherhead School of Management. The case study of Western Reserve University showed people could change on this complex set of competencies that called emotional and social intelligence competencies that distinguish outstanding performers in management and profession.

It is also important to stimulate the awareness of the relevant parties on the value of global logistics competencies especially the educators who mostly involved in designing the modernized logistics educational programs or improve effective curricula with these required global logistics competencies. The effectiveness of a well- designed undergraduate logistics curricula lies in the fact that how efficient curricula body integrated to ensure the development of the required competencies. Cooperation between academics and practitioners will help to direct what global logistics competencies the students should achieve successfully. The purpose of this research aims to find out the global logistics competencies that help develop the logistics students. It may useful to enhance and expand the quality of the other curricula by using this model for effective teaching deliveries improvement.

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