

# Soft Skills of Polytechnic Students in Indonesia Based on Comparative Analysis Data According to the Needs of Higher Education and Workplace

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## ABSTRACT

This study is a comparative analysis of data from several studies on the soft skills for students of polytechnic education. This research used qualitative analysis with grounded research method. The research findings Sharma (2009) identify and select seven soft skills i.e. communication skills, thinking skills and problem solving skills, team work force, life-long learning and information management, entrepreneur skills, ethics, moral and professionalism, and leadership skills to be applied in all institutions of higher education. In IQF (2012) for Diploma III and IV can be summarized their six soft skills. Measuring instrument ever developed, namely Soft Competency Scale-Self Administrated Questionnaire (SCS-SAQ) 2015 and is used to measure the index of polytechnic students soft skills contains eight soft skills. While the 8 research on the needs of soft skills in the workplace is obtained compilation of soft skills based on similar into 15 soft skills. On the other hand to build a model of competence in the organization/company, LOMA'S Competency Dictionary provides a selection of covers 14 generic competencies and 46 specific competencies. Through analytical methods grounded research, we concluded that the soft skills for polytechnic students in higher education required the existence of 12 soft skills, i.e. commitment, communication skill, detail orientation, entrepreneur skill, flexibility, integrity, leadership, lifelong learning, motivation, relationship building, self confidence, and thinking skills.

**Keywords:** soft skills, polytechnic students, comparative analysis, grounded research, higher education, workplace

## INTRODUCTION

In the Law of the Republic of Indonesia Number 12 Year 2012, it is stated that Higher Education is education after secondary education which includes diploma, undergraduate, master program, doctoral and professional programs, as well as specialist courses, organized by the college based culture Indonesian nation.

Polytechnic are Higher Education which organizes the vocational education in various clumps of Science and / or Technology. Vocational education diploma program is intended for graduates of secondary education or equivalent to develop skills and reasoning in the application of Science and / or Technology. Diploma program prepares students become skilled practitioners to enter the workforce according to their expertise. Polytechnic education learning gains is able to apply knowledge into a product design or process or apply knowledge into the planning and production control.

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Indonesian Qualification Framework (IQF) is a framework that integrates competence stages and qualifications between the education and training fields of employment and work experience for granting recognition of the competence of work in various sectors (President of the Republic of Indonesia Regulation No.8 of 2012). In IQF, mastery learning outcomes hereinafter called qualifications obtained through the internalization of knowledge, attitudes, skills, competencies, and the accumulation of work experience. IQF consists of 9 levels of qualification, starting from level 1 as the lowest level up to level 9 as the highest level.

Level qualified for a diploma III equivalent to the lowest level of 5, and a graduate of Bachelor of Applied Diploma IV or equivalent with a minimum level of 6. Description qualification levels 5 and 6 contains the values of Attitude, Skills General and Specialized Skills and Knowledge Mastery. Description of aspects of values required attitude shows the same description for levels 5 and 6, and in this aspect that represent elements of soft skills.

Soft skills or social skills are those personal values and interpersonal skills that determine a person's ability to fit into a particular structure, such as a project team, a rock group, or a company. The skills include personality traits like emotional maturity, eagerness to learn, and willingness to share and embrace new ideas (Nieragden, 2000). Soft skills are those skills that are outside a persons job description. They can include personality characteristics, including character, ethics, and attitudes. They include interpersonal skills such as written and verbal communication, sales and presentation skills, and leadership skills. They also include time and resource management skills including drive, focus, decision making, planning, execution, dealing with task overload as well as self and team evaluation and improvement (Wagiran, 2009). In summary, the definitions discussed suggest many interpretations of soft skills, depending on individual or organizational context and purpose.

The importance of soft skills by Phani Ram in Wagiran (2009) declared soft skills play a vital role for professional success; they help one to excel in the workplace and their importance cannot be denied in this age of information and knowledge. Good soft skills – which are in fact scarce – in the highly competitive corporate world will help you stand out in a milieu of routine job seekers with mediocre skills and talent.

Research conducted by *Robert Half* (Wagiran, 2009): The Most Valuable Qualifications for Technical Professionals, the first order of 43% is Industry specific knowledge, the second order of 32% is soft skills, and the most important soft skills for Technical Professionals, the first order of 37% is interpersonal skills, the second order of 20% is communication skill.

The urgency of soft skills in the education process can be seen from several studies. Attributes such as leadership, communication, problem solving, time management and teamwork, also known as soft skills, have become critical for entrance into today's job market. Employers are seeking employees with ability to ntegrate their technical knowledge with soft skills. Therefore, higher institutions need to play a vital role in integrating soft skills into the curriculum (Mai, 2012).

Soft skills in higher education can be seen in Sharma (2009), the specific soft skills to be applied in higher education institutions, & selected seven identified soft skills, i.e. thinking skills and problem solving skills, entrepreneur skills, communication skills, team work force, life-long learning and information management, ethics, moral and profesionalism, and leadership. In Indonesian Qualification Framework (2012), from the statement of values as aspects dimensional attitude soft skills at the level 5 and 6, there are six soft skills, i.e. entrepreneur skills, integrity, flexibility, teamwork and cooperation, discipline, and self confidence. And from Soft Competency Scale-Self-administrated Questionnaire (SCS-SAQ) (Ariyani, 2015), contains eight soft skills, i.e. communication skills, teamwork and cooperation, willingness to learn, integrity, leadership, flexibility, motivation and relationship building.

In the other hand, soft skills' need at workplace have various opinions and studies to formulate the various of the soft skills needed in the workplace/business-industrial place (note: in bahasa is DUDI), including from:

**Table 1.** Soft skills needed in workplace

Spencer & Spencer	Analytical thinking, conceptual thinking, teamwork and cooperation, information seeking, directiveness, team leadership, achievement orientation, concern for order and quality, initiative, interpersonal understanding, customer service orientation, impact and influence, organization awareness, relationship building
Patrick S. O'Brien	Communication skills, logic, group skills, ethics, leadership, organizational skills, effort
Ruben & DeAngelis	Communication in written and oral, skill in meeting, public speaking, problem solving, decision making skills, analytical/cognitive, teamwork, active learner, business orientation, positive behavior, integrity, motivation, flexibility/adaptability, academic achievement, commitment change, loyal, networking, organizational skills, management skills, System perspective, computer skills, economic/ statistic, knowledge of the quality approach, work experience, costumer orientation, extracurricular activity
Steven Cherri	Oral/spoken communication skills, questioning skills, critical thinking, risk taking skills, problem solving skills, teamwork/collaboration skills, honesty, work ethic/dependibility, leadership skills, influencing skills, self motivation/initiative, flexibility/adaptability, interpersonal skills, working under preassure, time management skills, creativity, research skills, organization skills, multicultural skills, computer skills, academic/learning skills, detail orientation, quantitative skills, teaching/training skills
Breitlink	Language proficiency, teamwork, work ethic, courtesy, confirmity to prevailing norms, self discipline and self confidence
Nieragden	Delegating skills, listening skills, presentation skills, problem solving, system thinking, troubleshooting, attitude, awareness, conflict handling, cooperation, diversity, tolerance, etiquette, interlocutor, orientaton, teamwork, willingness, compenstaion, stategies decision, making decision, learning, willingness self, assessment self, discipline, self marketing, stress resistance
NACE, USA	Communication skills, analytical thinking, teamwork skills, honesty/integrity, ethics, leadership, interpersonal skills, motivation/initiative, adaptability, computer skills, organization skills, detail orientation, self confidence, humble
Rilmar	Entrepreneurial leadership skills, oral communication skills, ability of communicating ideas effectively in teams, leadership in problem solving (problem solving), thinking skills and solve problems and communicate, an empathic and positive behavior, organizational commitment, in team leadership skills, make a proposal of business skills, non-verbal communication skills, provide skills training, coach, encourage the team, with the entrepreneurial ethic and positive behavior, professionalism in work, the skills to respond well, communicating skills oral, and in team work skills and delegation skills.

The compilation based on the similarity of soft skills needed in workplace, it can be screened into 15 soft skills, i.e. thinking skills & problem solving and decision making, entrepreneur skills, communication skills, teamwork and cooperation, willingness to learn (life-long learning and information management), integrity, leadership, flexibility/ adaptability, motivation, relationship building, detail orientation, discipline, organizational commitment, organization skills, self confidence.

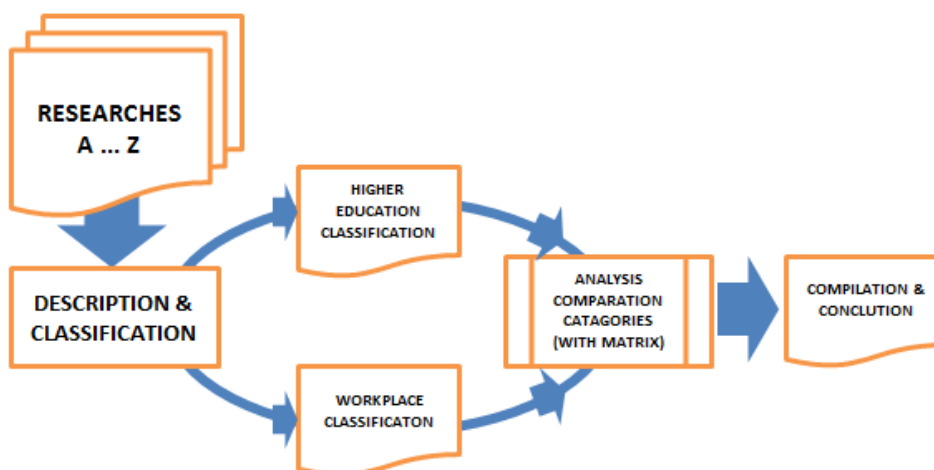
LOMA's Competency Dictionary is a dictionary containing a comprehensive generic competencies that can be used to build a competency model that is effective in an organization / company. To build a competency model, there is a wider selection, covering 14 generic competencies and specific competencies 46 (See **Table 2**).

**Table 2.** Generic & Specific Competency LOMA's

		<b>GENERIC</b>	<b>SPESIFIC</b>		
<b>PERSONAL ATTRIBUTES</b>	<b>INTERACTION SKILLS</b>	<b>INTERPERSONAL COMMUNICATION</b>	PROVIDING FEEDBACK	1	
			LISTENING SKILLS	2	
			INTERPERSONAL SENSIVITY	3	
		<b>DEVELOPING &amp; MAINTAINING RELATIONSHIP</b>	RESOLVING CONFLICTS	4	
			SERVICE ORIENTATION	5	
			TEAM ORIENTATION	6	
			<b>LEADERSHIP SKILLS</b>	MOTIVATING OTHERS	7
				COACHING	8
				INFLUENCING SKILLS	9
	<b>WORK ORIENTATION</b>	<b>DEPENDABILITY</b>	PROFESSIONAL INTEGRITY	10	
			WORKING AUTONOMOUSLY	11	
			PERSISTENCE	12	
		<b>PERSONAL MOTIVATION</b>	GOOL ORIENTATION	13	
			TAKING OWNERSHIP	14	
			INITIATIVE	15	
	<b>SELF-MANAGEMENT SKILLS</b>		SELF CONFIDENCE	16	
			STRESS TOLERANCE	17	
			ABILITY TO MAINTAIN COMPOSURE	18	
	<b>OPENNESS TO NEW EXPERIENCE</b>	<b>CONTINOUS LEARNING ORIENTATION</b>	SELF IMPROVEMENT ORIENTATION	19	
			WILLINENGNESS TO LEARN	20	
		<b>FLEXIBILITY</b>	ADAPTABILITY	21	
			RESOURCEFULNESS	22	
			CREATIVITY	23	
			<b>COGNITIVE ABILITIES</b>	<b>COMMUNICATION SKILLS</b>	PRESENTATION SKILLS
	READING COMPREHENSION	25			
	WRITING SKILLS	26			
	ORAL COMMUNICATION	27			
	<b>QUANTITATIVE SKILLS</b>	NUMERICAL REASONING		28	
		ARITHMETIC COMPUTATION		29	
		USING TABLES & GRAPHS		30	
		<b>ANALYTICAL SKILLS</b>		PLANNING & ORGANIZING	31
	INFORMATION MGT SKILLS			32	
	PROBLEM ANALYSIS			33	
	DECISION MAKING		34		
	ABILITY TO LEARN & FOLLOW FROCEDURES		35		
	MULTITASKING		36		
	<b>PERCEPTUAL ABILITIES</b>		ABILITY TO DEAL WITH COMPLEXITY	37	
			TIME MGT	38	
			CODING & CONVERTING	39	
	<b>BUSINESS KNOWLEDGE</b>	<b>ORGANIZATIONAL KNOWLEDGE</b>	PROOFING TEXT & NUMBERS	40	
			DETAIL ORIENTATION	41	
			RESOURCE MGT	42	
		<b>JOB SPECIFIC KNOWLEDGE</b>		PRACTICAL BUSINESS ORIENTATION	43
				KEYBOARD SKILLS	44
				TECHNICAL KNOWLEDGE	45
			COMPUTER LITERACY	46	

## METHODS

This research is qualitative analysis with Grounded Research method. The procedure of collecting data in this research, including qualitative collecting documents, such as public documents, such as paper (Creswell, 2010). The method of analysis Grounded Research (Moleong, 2010) is a constant comparison method, which regularly compares the data with others, and then regularly compare the category with other categories.



**Figure 1.** Flowchart of this research

## RESULTS AND DISCUSSION

The mindset of the study (See **Figure 2**) as follows: The first step is to develop a comprehensive and thorough description of some of the results of research, namely Sharma' research, SCS-SAQ POLMAN, IQF and 8 sources of research in the workplace. The next step is classification, which is sifting through data and combine it back. Furthermore, creating categories, namely the activities of transferring portions of data from one data to other data. Next create a relationship, as an empirical basis for linking categories. To connect between the categories, are used in the form of a matrix diagrams and charts. These matrices are used to make comparisons between the cases, and diagrams are used to present the shape and scope of the concepts and relationships in the analysis. The use of special signs on the diagram to help explain the relationship data. After getting compilation of data soft skills from various sources and then compile the results of the comparison return to the categorization of LOMA's Competency Dictionary and the results obtained 12 soft skills are required.

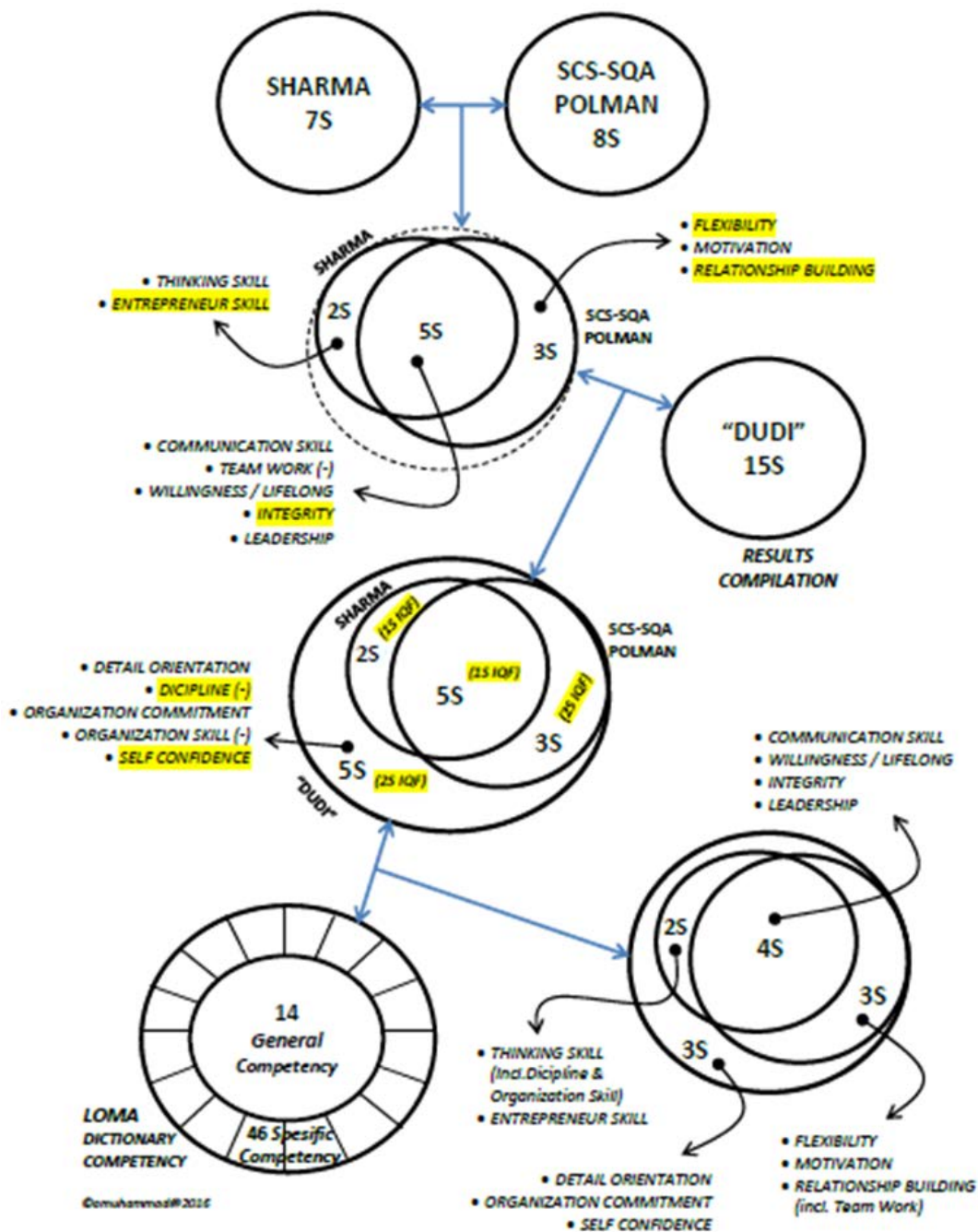


Figure 2. The mindset of the study

### Compilation between Sharma, IQF, SCS-SQA POLMAN and DUDI

The compilation (see Table 3) indicate the existence of 10 soft skills with the composition of two soft skills of Sharma not in SCS-SAQ Polman, 3 soft skills of SCS-SAQ Polman not in Sharma, and there are 5 the same soft skills of the slices both. Soft skills of IQF i.e. entrepreneur skills, integrity, flexibility, teamwork and cooperation, discipline and self confidence spread on every slice of Sharma, SCS-SQA and DUDI.



**Table 3.** Compilation between Sharma, IQF, SCS-SQA POLMAN and DUDI

SHARMA, A.		SCS-SQA POLMAN		IQF		"DUDI" (WORKPLACE)	
1	2	3	4	5	6	7	8
Thinking skill and Problem solving skill			Thinking skills and problem solving & decision making skill	2	SHARMA		
Entrepreneur Skill		Entrepreneur Skill	Entrepreneur skill		- Incl.(1) IQF		
Communicative Skill	Communication Skill		Communication skill	5	SHARMA		
Team Work Force	Teamwork & Cooperation		<i>Team work &amp; cooperation</i>		- Incl. (5) SCS-SAQ		
Life-long learning and Information Management	Willingness To Learn		Willingness to learn (lifelong learning & information management)		- Incl.(1) IQF		
Ethics, Moral and Professionalism	Integrity	Integrity	Integrity (integrity, ethics, moral and professionalism)				
Leadership Skill	Leadership		Leadership				
	Flexibility	Flexibility	Flexibility / adaptability	3	SCS-SAQ		
	Motivation		Motivation		- Incl.(2) IQF		
	Relationship Building	<i>Teamwork &amp; Cooperation</i>	Relationship Building				
			Detail orientation	5	"DUDI"		
		<i>Discipline</i>	<i>Discipline</i>		- Incl.(2) IQF		
			Organization Commitment				
			<i>Organizational skill</i>				
		Self confidence	Self confidence				

### Joint Compilation between Result Compilation and Correction of LOMA's

Correction with Dictionary Competency LOMA's (See Table 4 Column 2), are : Teamwork and Cooperation in research Sharma, SCS-SAQ Polman, IQF and DUDI, can be categorized in the soft skills of Relationship Building, and Discipline on IQF & DUDI, and Organizational Skill on DUDI, can be categorized as soft skills of Thinking Skills. Compiling a combination of Sharma, SCS-SAQ Polman, IQF and DUDI, and then corrected by the soft skills competencies contained in LOMA's Competency Dictionary, obtained by compiling conclusions soft skills as much as 12 soft skills as shown in Table 4 Column 3 below.

**Table 4.** Joint compilation between result compilation and correction of LOMA's Competency Dictionary

RESULT COMPILATION WITH "DUDI"		CORRECTION LOMA's		CONCLUSION COMPILATION	
1	2	3	4	5	6
1 Thinking skills and problem solving & decision making skill	1 <i>Discipline</i>	1 Thinking Skill	2 Incl. Discipline & Organizational skill		
2 Entrepreneur skill	2 <i>Organizational skill</i>	2 Entrepreneur Skill			
3 Communication skill	✓	3 Communication Skill	4 not Ind. Team work & Coop.		
4 <i>Team work &amp; cooperation</i>	✓				
5 Willingness to learn (lifelong learning & information management)	✓	4 Life-long Learning			
6 Integrity (integrity, ethics, moral and professionalism)	✓	5 Integrity			
7 Leadership	✓	6 Leadership			
8 Flexibility / adaptability	✓	7 Flexibility	3 Teamwork & Coop. entry in the category Relationship Building		
9 Motivation	✓	8 Motivation			
10 Relationship Building	3 <i>Teamwork &amp; Cooperation</i>	9 Relationship Building			
11 Detail orientation	✓	10 Detail orientation	2 Discipline & Organizational skill entry in the category Thinking Skill		
12 <i>Discipline</i>	✓				
13 Organization Commitment	✓	11 Organization Commitment			
14 <i>Organizational skill</i>	✓				
15 Self confidence	✓	12 Self confidence			

### CONCLUSIONS AND RECOMMENDATIONS

Based on a compilation of Tables 3 until 4 above, it can be concluded that the soft skills for polytechnic students in Indonesia required the existence of 12 soft skills, i.e. Commitment, Communication Skill, Detail Orientation, Entrepreneur Skill, Flexibility, Integrity, Leadership, Lifelong Learning, Motivation, Relationship Building, Self Confidence, and Thinking Skills.

After getting 12 soft skills required for polytechnic students, the next research step is to develop an instrument to measure the 12 soft skills which is owned by students and no less important is to integrate soft skills into the curriculum in higher education specially in polytechnic. Another next study as the recommendation is to assess the ranking of the 12 soft skills, with the level of importance of each soft skills, in order to obtain the soft skills that should have (must have) and minimal owned (have) by polytechnic students in Indonesia. The results of this study are expected to be used for the higher education particular in polytechnic, and can be filed on the intellectual property/patent documents in Indonesia.

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## Disclosure statement

No potential conflict of interest was reported by the authors.

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